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## Flight

and The Aircraft Engineer.

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## EDITORIAL COMMENT.



T the beginning of the War certain squadrons of the R.N.A.S. were sent to Ostend and Dunkirk to co-operate in the campaign involving the siege of Antwerp and the German advance on the coast. In connection with the movements of these squadrons it was decided by the

Admiralty to form armoured car units to act as aeroplane support, and a number of officers and men were recruited and sent over to form crews for these cars. In the course of the operations it was soon discovered that armoured cars, while they were practically useless as "aeroplane supports," nevertheless had a very distinct rôle of their own in modern war—as has been very adequately realised since, in many theatres of hostilities. As soon as this was

recognised by the Admiralty, it was represented to the War Office that armoured cars were a land force and should belong to the army, but, apparently, the idea being new and strange, the War Office would have nothing to do with the new organisation. Mr. Churchill, who was then First Lord, decided that the thing had got to be done, and that if the Army would not, then the Navy must, and the result was the formation of the R.N. Armoured Car Division. This force existed as an entity until August of 1915, when, Mr. Churchill, having left the Admiralty, all his schemes came under the ban of the new administration, and among others the Armoured Car Division, which was then disbanded and the *personnel* distributed all over the place. Most of the officers and men transferred to the R.N.A.S. Some—a very few—went to the Army. Others returned to civil life.

While the Division was in existence it sent squadrons overseas to France, to Gallipoli, to Russia, to German South-East Africa and to Egypt, where officers and men achieved a reputation second to none in the new formations either of the Navy or the Army, as can be gathered from a study of the honours list for the campaigns in which they served. Now, some of these officers and men, who served their country right gallantly, did not return to this country until nearly the middle of 1917, when they were for the most part transferred to the R.N.A.S. and so on to the R.A.F. Let it be understood that every one of these officers and men was a volunteer who had joined up in the first days of the War. Not a single one had waited to be dragged into the service as a conscript. Yet every document of the R.A.F. relating to the seniority of *personnel* lays down that "service in Armoured Cars is not to count." The consequence of this is that officers and men who were serving among the snows of Russia and the torrid heat of East Africa until the middle of 1917 find themselves hopelessly junior to men who were dragged out by the Military Service Act and who entered the R.A.F. as equipment and transport officers because it looked like being a safe job! There may be some good and sufficient reason for this anomaly, but it is difficult to discern, and we should really like to be enlightened. We have heard more than one explanation of it, but hesitate to pass any of them on. Certainly it seems to be up to the Air Ministry to make a statement which will at least ostensibly clear up a matter which, on the face of it, looks like a piece of flagrant injustice. We believe the matter is to be

raised in Parliament very early next session, so possibly the spokesmen of the Air Ministry may like to take time by the forelock and be ahead of their interlocutors with their explanations. It seems to us to have more than a little in common with that other matter of the service chevrons, to which we have drawn attention in past issues of "FLIGHT."

### The Future of the R.A.F.

If we are to judge by the conversations we hear among Service men there is much searching of heart going on because of what may happen in the course of the demobilisation of the fighting Services, and particularly in the R.A.F. The latter has expanded enormously during the War. As a matter of fact, the term expanded falls far short of being descriptive of its growth—there is no single word in the language which will adequately cover the ground. Where we had ten men in 1914 it is literally true to say that we now have ten thousand. Now, it is possible that the R.A.F. as a purely fighting force will not following peace be maintained for the next year or so at its present level. We do not know what the annual cost of the Force is on its present establishment, but we do know that it must be pretty big and that Parliament, and the country, having regard to our enormous war liabilities, may wish to modify the money vote for its maintenance. Moreover, although we are the strongest possible advocates of a paramount British air service as a collateral to a supreme navy, we have to bear in mind that in the final peace settlements there will probably be inserted certain clauses affecting armaments. It is impossible that the world should continue to support the burdens it was carrying in 1914, when the insane race of armaments had turned Europe into an armed camp and made war on the scale we have witnessed a practical possibility. Reduction there must and will be, nor does any reduction of armaments that may be settled by the peace delegates affect in the slightest degree the proposition that we must be supreme at sea and in the air. It is all a question of relative comparison. To take an extreme case, it might be agreed that the standard of air power for a first-class power shall be a permanent force of two hundred aeroplanes and ten airships. That, of course, is a ridiculous figure, we agree, but it will do for comparison. Then, for the British Empire to possess the margin necessary for safety, we might stipulate that we should have at least 250 of the one and 15 of the other. That would give us a formula of 50 per cent. superiority over the next strongest Power, which might be sufficient for all practical purposes if no new construction arose. As a matter of fact, it is not certain that the Council of the League of Nations, should such a League eventuate, would agree to any greater percentage of superiority—but that is an academic question into which we need not enter now. The points we want to make clear are, first, that it is not probable that the R.A.F. will be kept at its present strength after peace, and second, that air power is entirely a question of proportion.

These are facts which, if our information does not lead us astray, are fully appreciated by the thinking elements of the R.A.F., and here we would sound a word of warning. There is, we feel assured, a strong feeling in certain quarters that what we may describe as vested interests will best be served by maintaining the R.A.F. at its present level as a commercial

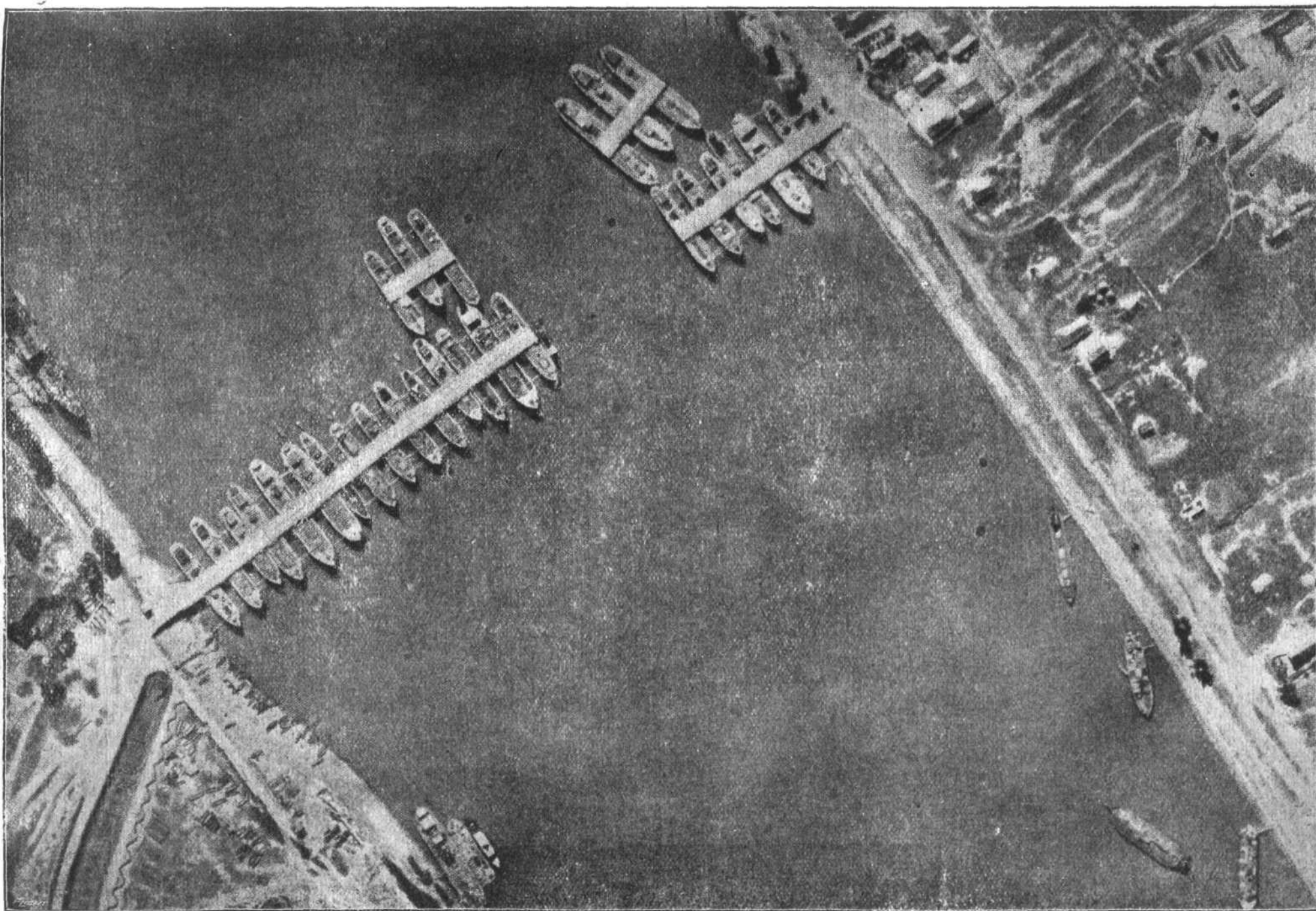
more than a military factor. At first glance there looks as if there were something to be said for the idea. The R.A.F. has all the experience of flying and of administration. On the manufacturing side, although most of the construction work has been done by private firms it has been conducted under such close control that the administration of the R.A.F. has learnt almost all there is to know about it. Therefore, it is argued, commercial aviation after peace ought to be a Government affair, run for the benefit(?) of the State—and that of the officials who can see their jobs slipping away from them by virtue of any decisions that may be reached on the subject of limitation of armaments. We do not intend to elaborate the subject at the moment. Doubtless most of our readers who have followed the trend of events know as much as ourselves about the matter and are following it just as closely. All we need say, then, is that any attempt on the part of the Government or its officials to gain control of the industry, whether through the R.A.F. or by any other methods must and will be resisted to the bitter end. If and when the exact relative strength of the R.A.F. has been settled it must in the interests of the taxpayer, no less than in those of the peace of the world, go through exactly the same process of demobilisation as the Navy and the Army. The industry and private enterprise at large are quite capable of looking after the commercial expansion of the movement.

### Government Inspection of Aircraft

Although, as we have said in the foregoing article, we are absolutely against any attempt of the State to take over the development of aviation in the future, there is one direction in which the Government can do good work. We hear that it has been decided that the A.I.D. is to be continued on its present basis, if not to be actually increased to cope with the work that it is anticipated it will have to do in inspecting machines for use not only by the R.A.F. but by private firms and individuals. As we understand the position, the authorities take the very proper view that in the interests of the public safety no machine, whether aeroplane or airship, can be allowed to fly until it has passed certain prescribed tests and been certified by the A.I.D. or some similar department as being safe and fit for its work.

Admittedly, it would be intolerable if every crank who thought he had invented the ultimate thing in flying machines had free license to fly it wherever he listed to the danger of the lieges. That way would lie disaster not only to individuals but to the whole industry and the movement at large. Manifestly, no one but a Government department can take on the work of inspection and the certifying of materials and the completed machine. For one thing, the requisite machinery would be far too complex and expensive for any private concern to stand. For another, its certificate would not carry anything like the same weight as that of the A.I.D., and would thus not command the confidence of the public. The A.I.D. is manifestly the right and proper authority to take over the duties of an inspection and licensing for use department. It already has in being all the requisite machinery for the work. It also has at its command a highly-trained personnel which has had a perfectly priceless experience during the War. It has sometimes been necessary to criticise its methods





A Pontoon Bridge over the Danube at Ismail (behind the Roumanian front), photographed from a German aeroplane at an altitude of 2,000 metres. It will be noticed that six of the pontoons have been removed to let transports through.

and condemn certain of its works, but taken all round we believe it may be adjudged a most efficient department.

Certainly that seems to be the opinion of our Allies and the Dominions, who have nearly all decided to adopt our own inspection methods to their own purposes. Apart from that, and apart too from all legitimate criticisms in detail that have been levelled at the A.I.D. in the past, its methods have certainly resulted in this: that the finished British fighting machine, aeroplane or airship, has been proved to be constructionally well in front of the products of any of our Allies. By the time the A.I.D. had finished with it and passed it as fit for service, it was as sound constructionally as anything built by human hands could be. To scrap such a machine now, when we know it will be needed to assist in the development of commercial flying, would be an insane act, and we are more than pleased to know that not only is this not in contemplation, but that the decision has already been taken that the A.I.D. is to carry on as before.

No doubt certain changes will have to be made in order to adapt its organisation to the uses of peace, but substantially it will remain as it has been evolved for the purposes of the War.

## The Trans-Atlantic Flight

Now that the War is over, attention is once more being concentrated on the flight across the Atlantic. The Royal Aero Club has announced that the embargo laid upon the race for the *Daily Mail* prize of £10,000 at the beginning of the War has been raised and the competition is thus open once more. The rules formulated by the Club for the competition in April, 1912, are once again given elsewhere in this issue, as a guide to those who may have forgotten some of the clauses governing this contest.

There is very little need for comment, either on the rules or on the possibilities of successful flight from America to Europe or *vice versa*. Four years ago it was really very doubtful if aircraft development had reached a stage which made such a flight more than remotely possible. It might have been accomplished, with good organisation and some amount of luck, and that is all we could have said about it.

To-day, however, the conditions are altogether different, and, assuming reasonably favourable weather conditions and good navigation, there is no practical or mechanical reason why the journey should not be carried out very shortly. Most of all depends on how far individual preparations have been advanced,

since, all other things being equal, the probabilities seem to be that the first good starter will win the prize.

Already one specific formal entry has been received, a British Whitehead machine. Naturally, we sincerely hope that one of our own machines, flown by British pilots, will succeed in winning the prize, but there is no doubt the embargo placed on the attempt by the R.A.F. some time since has kept things back and given others a start. Still, it is by no means too late for our own people to be well in the running, and we are practically assured that the first attempt will be by a British machine, to which we wish all possible success. We do not mind what machine wins—so long as it is British and flown by one of our own pilots. To succeed in the Atlantic flight as one of the first aerial acts of peace would be a fitting anti-climax to the splendid achievements of the British air services in the War.

## The London-Paris Service

We are certainly losing very little time in getting busy on the development of the commercial side of flying. Within a week of the signing of the armistice, Mr. G. Holt Thomas has announced the inauguration of a regular passenger service between London and Paris, with fares fixed at a rate which compares favourably with those of the railway and steamship companies, bearing in mind the saving in time. According to the time-table, the journey is to be made in  $2\frac{1}{2}$  hours—less than half the time occupied for the journey by the fastest train and boat service before the War. Mr. Handley Page has also promised a service between London and Paris with fares approximately the same as the ordinary first-class ticket for train and steamboat. This will mean that the business man will be able to leave London after breakfast, lunch comfortably in Paris and be back in town to dinner after having transacted his business on the other side. To our way of thinking, not the least wonderful thing about the project is that there is nothing to be said. Not so long ago, the daily newspapers would have asked for the internment of Mr. Holt Thomas and Mr. Handley Page in a lunatic asylum. Now they merely content themselves with giving these announcements as a piece of current, matter-of-fact news with scarcely a word of comment. Not a single question is raised as to the possibilities of carrying out the service, or as to the safety of the daily journey. All that is taken as a matter of course and accepted as such. So much has aviation progressed in a few short years!

## To Edinburgh in 4½ Hours

SPEAKING at Rochester the other day, Mr. Oswald Short said that one of their machines, piloted by Mr. L. Parker, left Rochester one afternoon recently at 4 p.m. and at 8.30 p.m. Mr. Parker was having dinner in Edinburgh, the average speed on the trip being 93 miles per hour. He added that the machine, which had only one engine, was a cheap one to build and the petrol used cost about £16.

## A Record in Looping

FROM Texas comes a claim for a new record in consecutive aeroplane looping on behalf of Lieut. W. T. Campbell, who is claimed to have made 151 loops.

## Sixteen Passengers over Paris

EVIDENTLY the passenger-carrying business is also beginning to boom in France, as a Paris telegram says that on November 13th the aviator Lorgnat, with sixteen passengers, flew over the French capital for over two hours.

A further message records the trial flight on November 18th

of an aerobus carrying 35 passengers from Combs la Vile to the suburbs of Paris and back again.

## America's Flying Effort

EIGHT thousand three hundred and ninety United States airmen, all expert flyers, were in France in October, 1918.

Eleven thousand United States aviators had already been trained to fly in October, 1919.

## What U.S. Timber Lands have Produced

OVER 132,056,288 ft. of first-class aeroplane timber has been produced in the north-west portions of the United States during the War.

## A Strange Story

A BRIEF message from *The Times* correspondent in Berne reported that ten German aeroplanes landed in Switzerland on November 13th, two having been shot down.

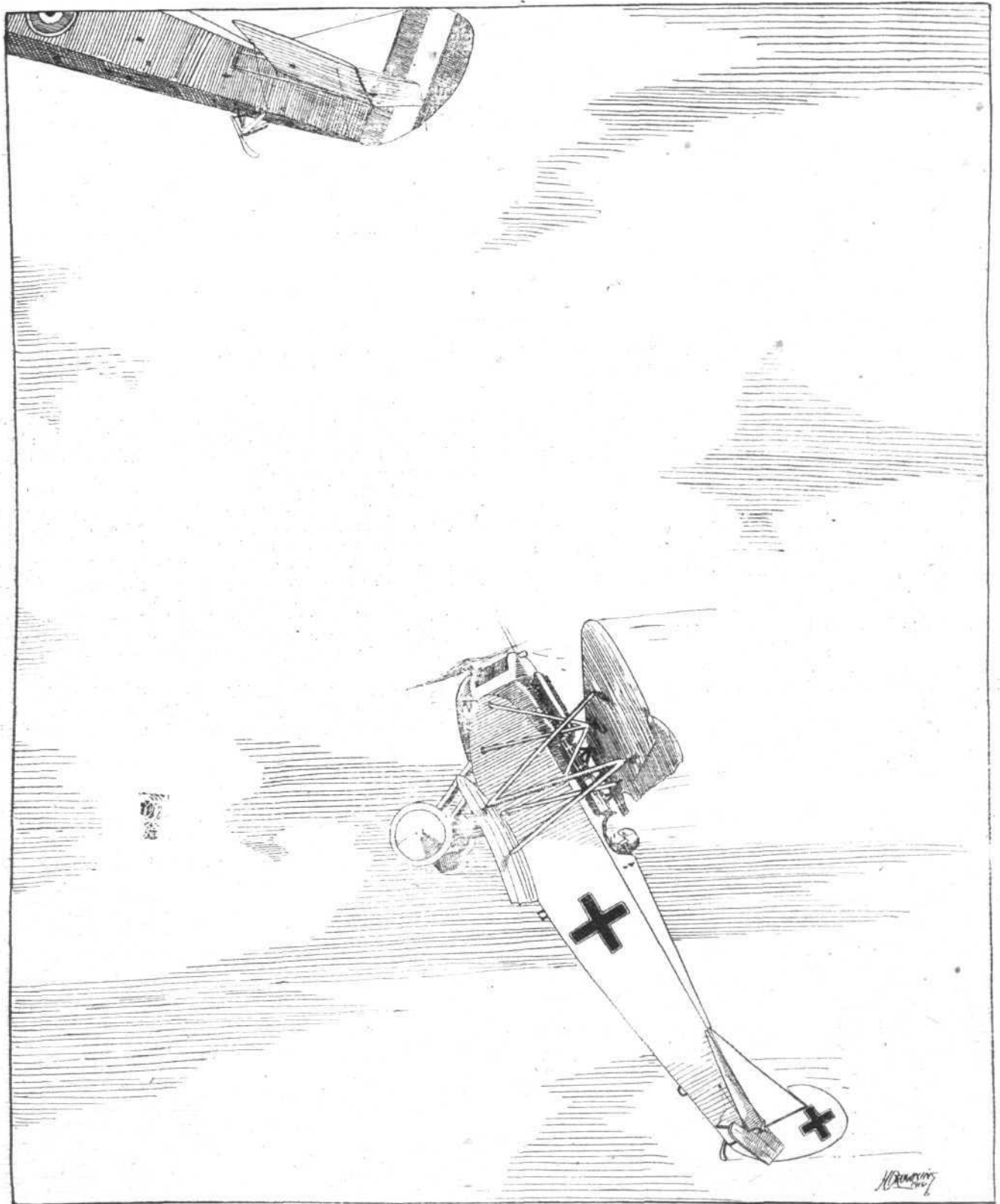


## "HANGING ON THE PROP."

THERE are few evolutions in the air of which the modern aeroplane is not capable when handled by a skilful pilot. The loop, the "apple turn-over," the spiral nose-dive, the spin, the Immelmann turn, the dead leaf fall, and a host of others will be familiar to many readers of "FLIGHT," as they are to be seen almost any day from one or more of London's suburbs. There is one stunt, however, which has not yet become familiar on this side of the Channel, although it will probably not be long before that also is numbered among the service pilot's stock-in-trade. The evolution we have on mind, and which was, we understand, originated by pilots of Fokker biplanes at the Front, has become known as "hanging on the prop." The title is very descriptive,

conveying as it does the idea that the machine is held up by the propeller only. This would be exactly the impression of another aviator watching from an aeroplane travelling at ordinary speeds, although in point of fact it appears very doubtful whether the machine is stationary. It is far more likely that it is moving along, but at so comparatively slow a rate that to an observer watching from another machine moving along at a speed well above 100 m.p.h. it does indeed appear to be "left standing."

In the accompanying sketch we have endeavoured to convey an impression of the attitude which the Fokker biplane assumes when performing this new "stunt." As a matter of fact, it may be doubtful whether the machine actually



"HANGING ON THE PROP."—The Fokker biplanes are said to be able to assume an attitude similar to that shown in this sketch, and to remain apparently stationary for long periods.

assumes a position so near the vertical, but when preparing the drawing it was found that if the angle was less, the drawing did not convey the impression desired but rather one of a modern high power machine climbing at a steep angle.

From what we can gather from pilots who have seen the Fokker go through this evolution it appears that this machine is able, not only to assume this attitude, but to maintain it for long periods, the latter being the feature of the stunt which impresses pilots most. It is, we think, generally agreed that the majority of machines, if placed in such an attitude, would be very prone to come out of it in a side slip or a tail slide. This does not appear to be the case with the Fokker which, as already pointed out, seems to be able to maintain this extraordinary position practically indefinitely.

As to the advantages of this stunt, these would appear to be a steady platform from which to fire, and the ability of firing up at a machine passing overhead, i.e., in a position where it is precluded from returning the fire.

Aerodynamically the why and wherefore of this remarkable performance can scarcely be accurately stated without the most complete data of the machine, engine and propeller. Broadly speaking, what would appear to happen is this: The machine is travelling along an approximately horizontal flight path, probably at the same time climbing slightly. This would mean that the machine was very *cabré* not only relatively to the horizontal but also to its flight path. The propeller axis therefore forms an angle with the relative wind, the component of which that is parallel to the propeller axis being small. This would mean that the translational speed of the propeller (along its axis) would be small, and furthermore that the conditions obtaining would be rather

different from those of a machine travelling slowly but with its propeller axis parallel or nearly so to the flight path. In the case of the Fokker, it would appear that the propeller, owing to its oblique path through the air, is acting less as a fan than is a propeller moving slowly through the air with its blades revolving in a plane practically at right angles to the relative wind. This would probably mean that although the efficiency would be very low, the thrust would be comparatively high, not high enough, of course, to absolutely sustain the machine, but high enough to do so in conjunction with the air pressure on the wings, body and tail of the machine.

The air pressure would, of course, as the machine is assumed not to be quite vertical, have a resultant having an upward slope, and between the resultant of the air pressure on the machine, which would have an upward and rearward direction, and the propeller thrust, which would have an upward and forward direction, the machine is sustained. The resultant of these two components would have a forward slope, as the machine is supposed to be travelling along horizontally.

Another "explanation" might be that the machine is actually dropping all the time, the propeller thrust merely serving to retard the fall sufficiently to give the impression that the machine is "hovering." As has been pointed out, without having full data of the machine, engine, and propeller, it is hardly possible to give a correct explanation of what takes place, and in the foregoing we have only endeavoured to indicate briefly the principles involved. If any readers should have a fuller, or a different, explanation, we shall be pleased to open our columns to a discussion of the aerodynamic side of the problem.

## HONOURS

It was announced in a supplement to the *London Gazette* on November 18th that the King has given orders for the following appointment to the Order of the British Empire for distinguished service in connection with military operations in France and Flanders (June 3rd, 1918):—

### Members (M.B.E.)

Sec. Lieut. P. Coombs, R.A.F. (For an act of gallantry not in the presence of the enemy.)

It was announced in a supplement to the *London Gazette* of October 21st that the King has been pleased to approve of the following award:—

### Military Medal.

O.N. M/6644 S.B. Attdt. W. J. Lamprell, R.N.A.S., B.R.

### Corrections

The following are the correct descriptions of officers and other ranks of the R.A.F. who have been recently granted decorations:—

Col. (T. Brig.-Gen.) Charles Laverock Lambe, C.M.G.,

D.S.O. (awarded Belgian Croix de Guerre in *Gazette* of September 21st, 1918, when the surname was printed incorrectly).

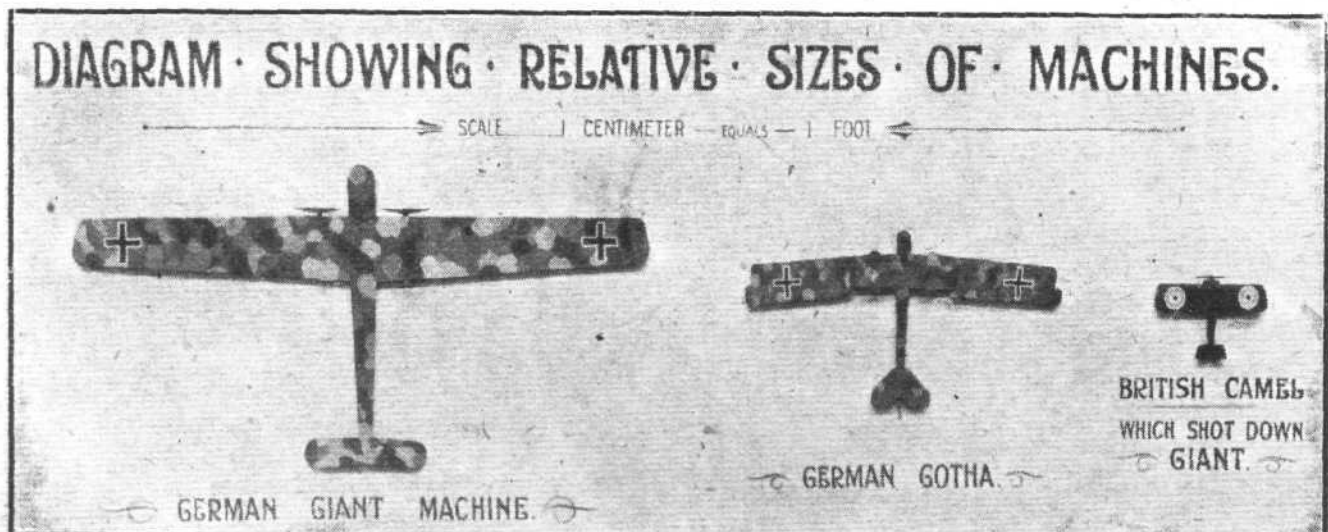
Lieut. James Kingsley Aldrich Jeakes, D.F.C. (Awarded D.F.C. in *Gazette* of September 21st, 1918; the Christian names were then incorrectly stated.)

Lieut. Arthur Vooght Dufton (Observer, attached Intelligence Corps). (Awarded the French Croix de Guerre in *Gazette* of September 21st, 1918, when the second Christian name was printed incorrectly.)

Lieut. William Carpenter Lambert, D.F.C. (Awarded D.F.C. in *Gazette* of August 3rd, 1918; the words "Temp. Capt." were printed therein in error.)

65298 1st C. Pte. (Acting Sergt.) Ernest Clare, D.F.M. (Chorley). (The award of D.F.M. was gazetted September 21st, 1918, when the Air Force Number was incorrectly stated.)

F 9689 A. Air-Mech. (W. T.) Albert Edward Clarke, D.F.M. (Woodford). (The award of D.F.M. was gazetted September 21st, 1918, when the surname was incorrectly spelt).



At the Enemy Aircraft Exhibition at the Agricultural Hall.



# FROM A RIGGER'S NOTE-BOOK.

By "PLUMB-LINE."

[From the amount of correspondence that reaches us it is quite evident that the subject of rigging has been badly neglected in aeronautical literature, and that, in consequence, the man who wishes to post himself on this subject—in so far as is possible by book study—finds that very little has been written on the subject. Some of the text-books published contain chapters dealing with rigging, and then there is the excellent little booklet issued by the Avro firm dealing with the erection and rigging of the Avro biplanes, but beyond that there is little of value to the student who wishes to become familiar with the rigger's art. The reason for this scarcity is, perhaps, not far to seek, for rigging is eminently a practical man's task, and can, it goes without saying, only be mastered after long practical experience. There are, however, fundamental principles governing the procedure, and these, at any rate, may be indicated by written instructions. This is precisely what "Plumb-line" has done in the present brief notes, which are, as a matter of fact, taken from the note-book of a practical rigger, and which will, we feel sure, be found useful by many of our readers. We apologise for having picked on the notes dealing with such an ancient machine as the B.E.2c, but to publish methods dealing with a modern machine might convey information likely to be of use to the enemy, which, in these days, one must avoid at all costs. We trust, however, that it will be found that, generally speaking, much of what is said regarding the B.E.2c will apply with no or with only slight modification to other types of two-seater tractors. At any rate sufficient will have been indicated of the general procedure to form a basis on which to determine the best way to "go about it" also in the case of other machines differing in many details from the B.E.2c.—ED.]

## Rigging a B.E. 2c

### Trueing up the Fuselage.

FIRST place the fuselage on trestles and start by trammelling the inner cross-bracing wires, tightening them up to a fair tension and making sure that the diagonal distances are equal in each pair. The next step is to fit on the rudder post and to hang a plumb-line from the top of it as shown in Fig. 1. Then bisect all side struts in fuselage except the steel strut aft of the pilot's seat, which should be marked off  $\frac{1}{2}$  in. above its centre. Trammel the side bracing wires of the first two bays, and when this has been done clamp a piece of wood laterally through the fuselage on the front struts in such a position that its upper edge is level with the centres previously marked on the struts. Similarly a piece is clamped on the rear struts, projecting about six inches on each side. A piece of line is then stretched tightly between front and rear transverse pieces and secured in place. If the line is only just allowed to clear the side struts it will form a convenient datum line for trueing up the side bracing.

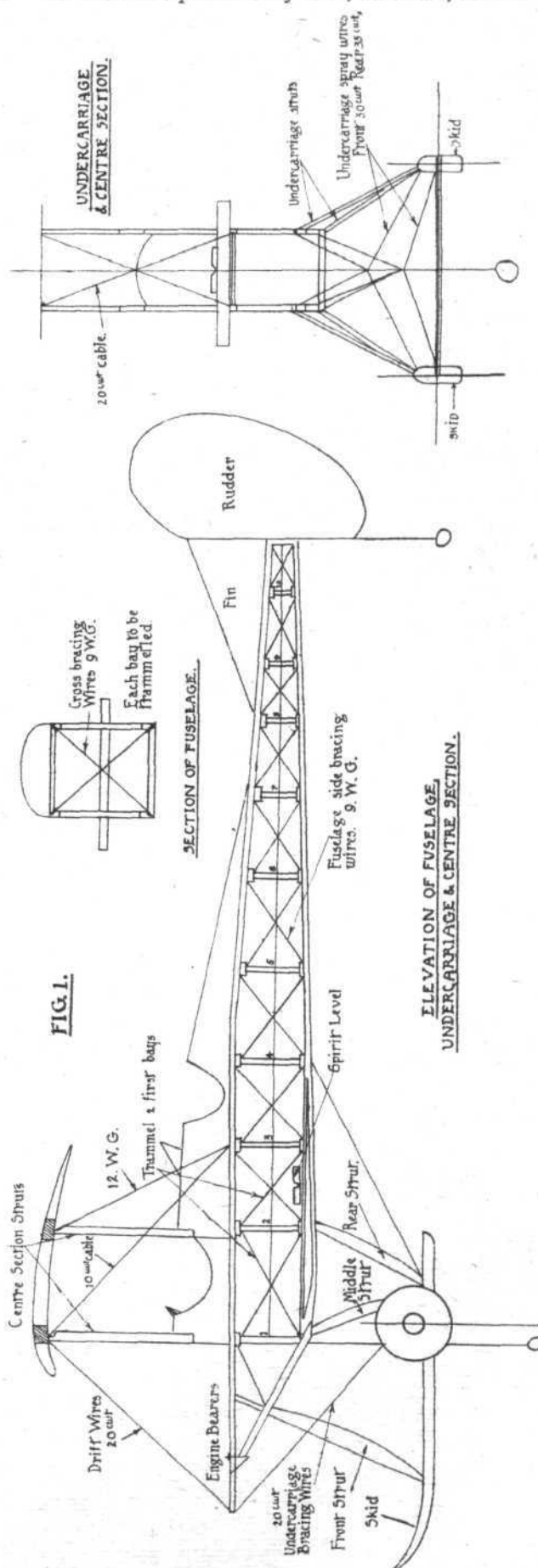
The side bracing is now adjusted, starting in front and working towards the stern, until the under side of the line is level with the centres marked on the side struts. An exception is, as already mentioned, the steel strut, which should intersect the line  $\frac{1}{2}$  in. above its centre. Both sides must be equally tensioned, and to ascertain that this is being done the plumb-line must be watched constantly. It must hang perfectly true with the rudder post. This operation is somewhat difficult at first, and requires a good deal of experience. The bracing wires must not be too slack, or the machine will be soft and flabby. Neither must they be too taut, as this puts unnecessary strain on struts and longerons. The tension should be just sufficient to keep the fuselage rigid. Anything more than this spoils the rigging by putting various parts into undue compression, by pulling the metal fittings into the wood, and will ultimately distort the whole machine. Only experience will teach the right tension to employ and the knack of making all wires of equal tension. When all is trued up lock all wires by tightening the lock nuts, taking care not to alter the adjustment previously obtained.

### Flying Position

Having trued up the fuselage, the next job is to put it up in flying position on trestles. The trestles should be a sufficient height to ensure that when the chassis is put into place it will just clear the ground. Place a spirit level on the forward portion of the bottom longeron and pack up the stern securely until the spirit level shows perfectly true. This gives the longitudinal level. To get the lateral level place a parallel straightedge across the engine bearer tubes, and on this straightedge place the spirit level. Pack up the fuselage on the trestles until it is quite level. This levelling-up is very important, and the greatest care should be taken to see that it is correct, as the adjustments of wings, undercarriage, tail plane and engine depend upon its correct adjustment. Now go over the fuselage again and check for truth.

### Centre Section and Undercarriage

Erect the centre section on its struts and temporarily connect all wires. Now trammel the front and rear cross bracing wires, adjusting them to a fair tension. Drop plumb-lines on both sides of machine from centres of front spar plates



on centre section. Adjust the drift and anti-drift wires until the plumb-line cuts the centre of fuselage cross tubes. (The centre section struts should be at right angles to the tubular engine bearers.) The undercarriage should now be

The struts can then be inserted and the bracing temporarily connected up. The planes are then lifted up on to trestles and bolted to the fuselage and centre section respectively. The trestles should be placed under the outer struts, care

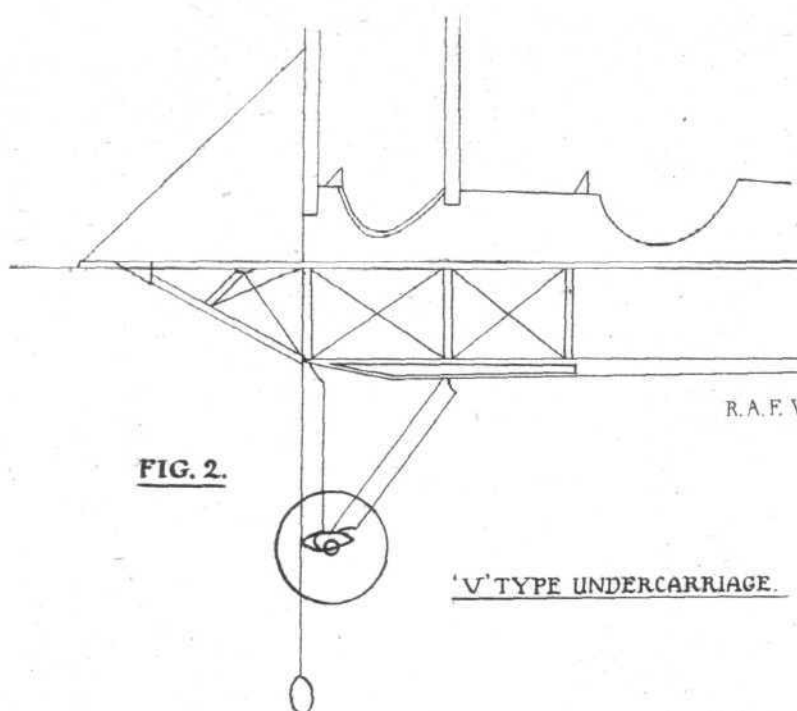
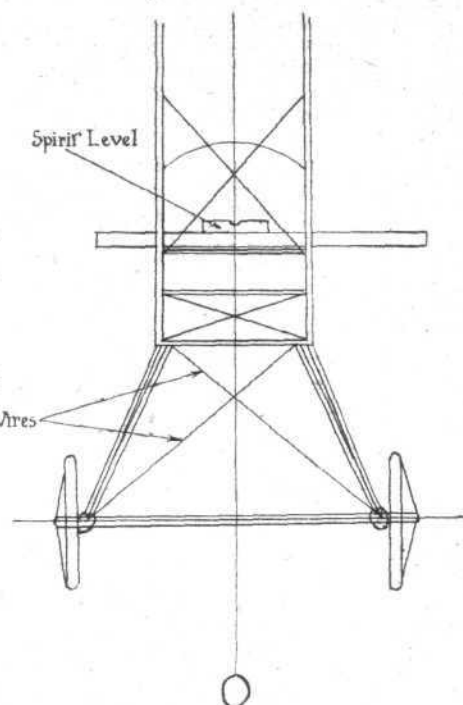


FIG. 2.

'V' TYPE UNDERCARRIAGE.



Spirit Level

R. A. F. Wires

fixed and wired up. Trammel the top halves of front and rear spray wires and then adjust the side bracing wires so that the plumb-line hanging from centre section is 5 in. in front of centre of axle. Hang another plumb-line from centre of engine bearer cross-tube, and if the adjustment is accurate it should intersect the centres of axle, front and rear spray-

being taken that they do not damage the ribs and fabric by undue pressure. To obtain the dihedral angle stretch a line tightly from the top plates of the outer struts on one side to the top plates of the outer struts on the other, on both front and rear spars (Fig. 4). The adjustment is made on the landing wires so that a measurement of  $9\frac{1}{2}$  in. is obtained

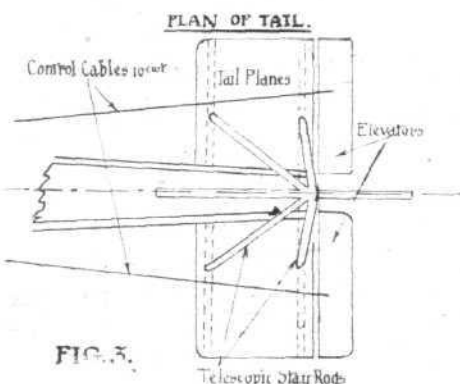


FIG. 3.

Telescopic Stay Rods

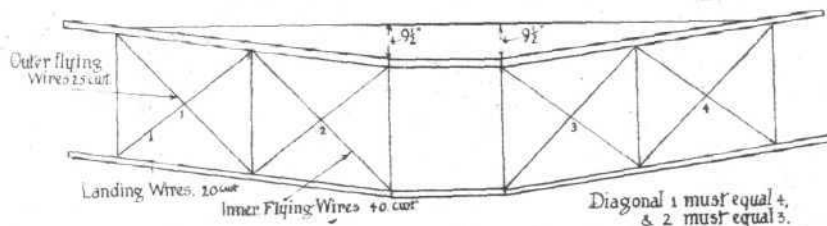


FIG. 4.

DIHEDRAL ANGLE.

wire rings, and also the tail skid. In the case of the Vee type undercarriage (Fig. 2) there is, of course, no question of any side bracing wires.

### Tail Plane

The tail plane is now the next thing to go on the machine (Fig. 3). Place it in the brackets and adjust it by means of the bolts provided for the purpose so that its leading edge is  $\frac{3}{4}$  in. above the centre of the rear strut in the fuselage. Bolt on the fin and rudder post and also the stay-rods for the tail plane. Level tail plane laterally by means of the telescopic stay-rods. Fix elevators to tail plane and connect up control cables. The control lever in the pilot's cockpit should be securely fixed by lashing it to the fuselage, keeping it central laterally but inclining slightly forward. Adjust the control cables so that the elevators are in continuation of tail plane. Their rudder must now be fixed and connected up with its control cables, and so adjusted that it is in line with the centre line of the fuselage. The rudder bar in the pilot's cockpit should be at right angles to the centre line. Care should be taken to see that all control cables run freely in the pulley-guides and fair-leads, and that they are free from kinks and frayed strands. The latter can easily be discovered by passing the hand over the wires, when a broken strand is quickly found.

### Main Planes

When about to erect the main planes it is a good plan to start by placing them on their leading edges on the floor.

between the line and the centre section struts. The measurement should be made just inside the centre section struts. Each bay must now be measured diagonally, and corresponding bays on each side must, of course, be the same

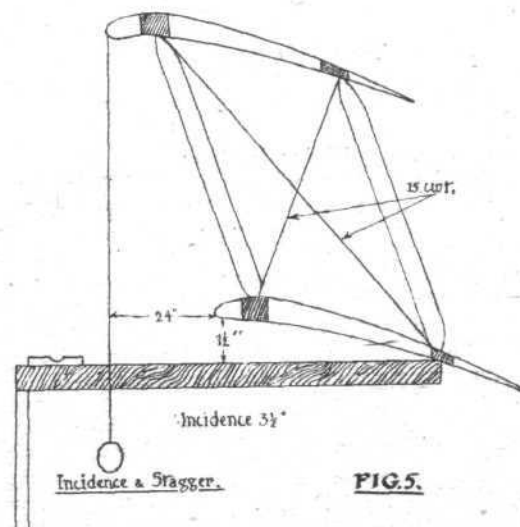


FIG. 5.

### Angle of Incidence and Stagger

The method of obtaining the angle of incidence and stagger is as follows: Drop plumb-lines over leading edge of top



planes opposite struts and near the fuselage. The adjustments should now be so made as to obtain a distance of 24 in. from the leading edge of the bottom plane to the plumb-lines, measured horizontally. The necessary adjustment is obtained by tightening and slacking the incidence wires, stagger wires and rear landing wires. At the same time the angle of incidence must be got. To facilitate this obtain a straightedge, preferably one of hard wood and perfectly true, a spirit level, and a piece of wood about 5 ft. in length to serve as a steadying staff.

Place one corner of the steadying staff under the centre of the rear spar (see Fig. 5) and put the spirit level on top of the straightedge. Prop up the straightedge on the staff,

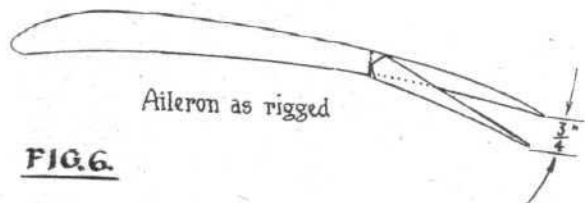


FIG. 6.



FIG. 7. 'Locking Turnbuckles

the other end of which rests on the floor. The straightedge must be held perfectly level, and the measurements taken in a line where the struts occur. From under side of leading edge to top of straightedge the distance is  $1\frac{1}{2}$  in., and is obtained by adjusting the wires mentioned above. The right wires to pull on will soon be found by a little experimenting. The main thing to remember is to always keep the flying wires slack until the last, when they are tightened just sufficient to put them in a slight tension. If the angle of incidence is too great, the rear spar must be lifted by means of the wires running to the bottom of the rear struts and slackening the opposing wires. The reverse is done if the angle is too small, at the same time keeping in mind the stagger, and the fact that the rear landing wires must do their share of the work. When the set measurements of the different angles and stagger have all been obtained go over everything again, as it is possible that in making the last adjust-

ment the first may have been slightly thrown out and will need correcting again.

#### Ailerons

The aileron controls should be connected next and also the balance wire on the top plane, and so adjusted that the ailerons have a droop of  $\frac{1}{4}$  in. below the trailing edge of the main planes (Fig. 6). The reason for this is that in this manner the ailerons are able to lift slightly when in flight, owing to a certain amount of slackness in the control cables. These

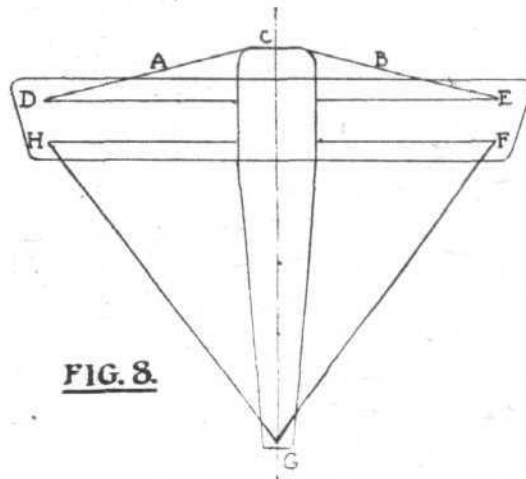


FIG. 8.

must not be adjusted tightly, as they would then have a tendency to bind on the pulleys, cause unnecessary friction and make it difficult for the controls to work. All control cables should be adjusted to a nicety, as the quick and easy control of the machine depends upon them being at the right tension. If too slack there will be a lag and snatch on the controlling surfaces. All turnbuckles (see Fig. 7) must be properly locked with soft iron wire, but care should be taken not to spoil the adjustment in doing so.

#### Over-all Measurements

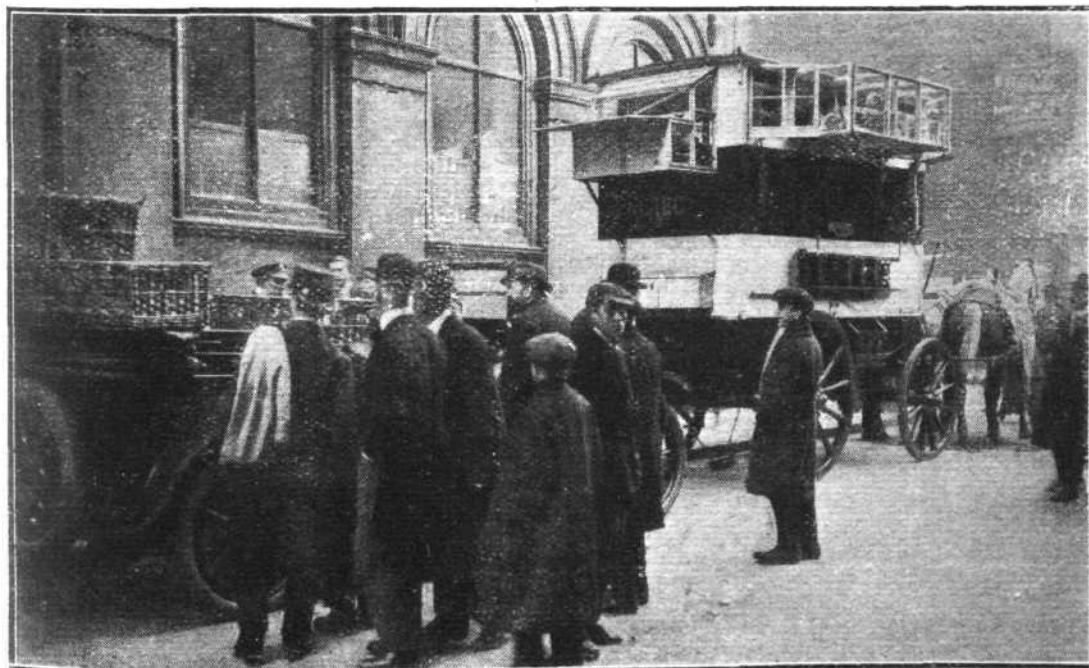
Finally the over-all measurements indicated in Fig. 8 should be made. If A does not equal B and HG does not equal FG, it will be found that the drift and anti-drift wires require re-adjustment until both sides of the machine are equal. In other words until the planes are at right angles to the centre line of the fuselage.

#### Zepps. Unsaleable at £12

INFORMATION received in Paris at the beginning of the week went to show that ridiculous prices were obtained at a sale of war material conducted by the Soviet in Strasburg. Among other items an aeroplane changed hands at £5, but no buyers could be found for a Zepp. for which £12 was asked.

#### To Fly to the North Pole

CAPT. ROBERT A. BARTLETT, now an officer in the United States Navy, is planning to resume his adventures in the Arctic regions, and proposes to fly an aeroplane from Etah, Greenland, to the North Pole next July. After his arrival at the Pole, he hopes to fly to Cape Chelustin, Asia.



A German War pigeon-loft and its inhabitants, in the Lord Mayor's Show.

"Flight" Copyright.

# The Royal Aero Club of the United Kingdom

OFFICIAL NOTICES TO MEMBERS

## THE FLYING SERVICES FUND

(Registered under the War Charities Act, 1916)

Administered by the Royal Aero Club

For the benefit of Officers, Non-Commissioned Officers and Men of the ROYAL AIR FORCE who are incapacitated on Active Service, and for the Widows and Dependants of those who are killed.

### Honorary Treasurer:

The Right Hon. LORD KINNAIRD.

### Committee:

Mr. CHESTER FOX.  
Lieut.-Col. HARCOURT G. GOLD, R.A.F.  
Lieut.-Col. T. O'B. HUBBARD, M.C., R.A.F.  
Lieut.-Col. C. E. MAUDE, R.A.F.  
Colonel R. H. MORE, C.M.G., R.A.F.

### Secretary:

Lieut.-Com. H. E. PERRIN, R.N.V.R.

### Bankers:

Messrs. BARCLAYS BANK, LTD., 4, Pall Mall East, London, S.W. 1.

### Subscriptions

	£	s.	d.
Total subscriptions received to Nov. 12th, 1918	13,855	0	3
N.C.Os., Men and Women of No. 78 Squadron, Royal Air Force, Sutton's Farm, Hornchurch	13	3	0
Officers, Non-Commissioned Officers and Men of No. 7 A.A.P., Royal Air Force, Kenley, Surrey	10	1	3
Men's Canteen Fund of No. 208 Squadron, Royal Air Force, B.E.F., France	20	0	0
M. H. Volk	1	1	0
Total, November 19th, 1918	13,899	5	6

Offices: THE ROYAL AERO CLUB,  
3, CLIFFORD STREET, LONDON, W. 1.  
H. E. PERRIN, Secretary.

## THE DAILY MAIL ATLANTIC PRIZE.

Now that the Royal Aero Club, with the advent of the Armistice, has officially notified all those whom it may concern that the *Daily Mail* Prize for an Atlantic crossing, via the air, is now again open for competition, we re-print the rules governing this prize, as no doubt there are many who may not have in mind all the clauses and their bearing.

The Proprietors of the *Daily Mail* have offered the sum of £10,000 to be awarded to the aviator who shall first cross the Atlantic in an aeroplane in flight from any point in the United States, Canada, or Newfoundland to any point in Great Britain or Ireland, in 72 consecutive hours. The flight may be made either way across the Atlantic.

**Qualification of Competitors.**—The competition is open to persons of any nationality holding an aviator's certificate issued by the International Aeronautical Federation and duly entered on the competitors' register of the Royal Aero Club.

**Entries.**—The entry form, which must be accompanied by the entrance fee of £100, must be sent to the Secretary of the Royal Aero Club, 3 Clifford Street, London, W. 1, at least 14 days before the entrant makes his first attempt.

No part of the entrance fee is to be received by the *Daily Mail*. All amounts received will be applied towards payment of the expenses of the Royal Aero Club in conducting the competition. Any balance not so expended will be refunded to the competitor.

**Starting Place.**—Competitors must advise the Royal Aero Club of the starting place selected, and should indicate as nearly as possible the proposed landing place.

All starts must be made under the supervision of an official or officials appointed by the Royal Aero Club.

**Identification of Aircraft.**—Only one aircraft may be used for each attempt. It may be repaired en route. It will be so marked before starting that it can be identified on reaching the other side.

**Stoppages.**—Any intermediate stoppages may only be made on the water.

**Towing.**—Towing is not prohibited.

**Start and Finish.**—The start may be made from land or water, but in the latter case the competitor must cross the coast-line in flight. The time will be taken from the moment of leaving the land or crossing the coast line.

The finish may be made on land or water. The time will be taken at the moment of crossing the coast-line in flight or touching land.

If the pilot has at any time to leave the aircraft and board a ship he must resume his flight from approximately the same point at which he went on board.

### Comrades of the Empire

UNDER the authority of the Admiralty, the War Office, and the Air Ministry, a conference was held on November 5th at the Horse Guards, Whitehall, to consider the best method of fostering the spirit of comradeship and mutual help among all who have served and are serving in the Royal Navy, the Army, and the R.A.F.

General Sir Ian Hamilton, G.C.B. D.S.O., who presided,

### General

1. A competitor, by entering, thereby agrees that he is bound by the regulations herein contained or to be hereafter issued in connection with this competition.

2. The interpretation of these regulations or of any to be hereafter issued shall rest entirely with the Royal Aero Club.

3. The competitor shall be solely responsible to the officials for the due observance of these regulations, and shall be the person with whom the officials will deal in respect thereof, or of any other question arising out of this competition.

4. A competitor, by entering, waives any right of action against the Royal Aero Club or the proprietors of the *Daily Mail* for any damages sustained by him in consequence of any act or omission on the part of the officials of the Royal Aero Club or the proprietors of the *Daily Mail* or their representatives or servants or any fellow competitor.

5. The aircraft shall at all times be at the risk in all respects of the competitor, who shall be deemed by entry to agree to waive all claim for injury either to himself, or his passenger, or his aircraft, or his employees or workmen, and to assume all liability for damage to third parties or their property, and to indemnify the Royal Aero Club and the proprietors of the *Daily Mail* in respect thereof.

6. The committee of the Royal Aero Club reserves to itself the right to add to, amend, or omit any of these rules should it think fit.

### The First Entries

THE first entry in Great Britain for the *Daily Mail* Trans-Atlantic prize was lodged with the Royal Aero Club on November 15th by the Whitehead Aircraft Co., Ltd. The machine is described as a Whitehead biplane fitted with four screws, each driven by a 400 h.p. Liberty engine. The machine, which is said to be nearing completion, is of 120 ft. span and an overall length of 65 ft., while the speed is expected to be in the neighbourhood of 115 m.p.h. It is proposed to start early next year from Whitehead Park, Feltham, and replenish fuel tanks at Oranmore, Galway. Capt. Arthur Payze, R.A.F., is nominated as the pilot, and he will be accompanied by an assistant pilot, a navigator, and one mechanic.

It is stated that a 1,600 h.p. Handley-Page has been entered in America, as well as a 5,000 h.p. Caproni. A group of financiers, represented by Mr. Henry N. Attwood, has also offered to enter a machine in the name of the Aero Club of America.

was elected chairman of a consultative committee of representatives of the three services, which will collect evidence regarding the work of existing organisations and report as to the best methods of co-ordinating them. Another committee, under the chairmanship of Admiral Lord Jellicoe, G.C.B., O.M., is to consider the promotion of comradeship throughout the Empire among all who have served in the present War.



# THE ROLL OF HONOUR

(When an Officer is seconded from the Army, his unit is shown in brackets.)

Published November 13th

**Killed**  
 Bingham, Sec. Lieut. R. G. A.  
 D'Albenas, Sec. Lieut. P. D.  
 Doggart, Capt. N. A.  
 Rattle, Sec. Lieut. L. C.  
**Died of Wounds**  
 Brown, Lieut. G. C.  
**Died**  
 Gilbert, Lieut. A. E. (Can. F.A.).  
 Lloyd, Lieut. L. B. E.  
**Wounded**  
 Clawson, Sec. Lieut. D. V.  
 Glasson, Capt. G. W. T.  
 Gordon, Lieut. R. McI.  
 Hallonquist, Capt. J. E. (Sask.).  
 Hagan, Sec. Lieut. W. J.  
 Joseph, Capt. S. C., D.F.C.  
 Officer, Lieut. J.  
 Price, Lieut. J. W. G.  
 Shaw, Sec. Lieut. G. G.  
 Stead, Sec. Lieut. T.  
**Previously Missing, now reported Wounded and Prisoners**  
 Johnston, Sec. Lieut. W. A.  
 Norcross, Lieut. B.  
**Missing**  
 Bayley, Lieut. F. G.  
 Bridger, Sec. Lieut. H.  
 Case, Sec. Lieut. B. S.  
 Coleman, Lieut. J. P.  
 Harrison, Sec. Lieut. J. E.  
 Kelly, Sec. Lieut. C. L.  
 McLaren-Pearson, Lieut. J.  
 Murray, Sec. Lieut. H. G.  
 Riffkin, Sec. Lieut. R.  
 Ross, Sec. Lieut. A. J. F.  
 Smith, Sec. Lieut. N.  
 Stockwell, Sec. Lieut. L. G.  
 Sutcliffe, Sec. Lieut. G.  
**Previously Missing, now reported Prisoners**  
 Baddeley, Sec. Lieut. E. L.  
 Carlin, Capt. S.  
 Harrison, Sec. Lieut. C. A.  
 Hyde, Lieut. H. E.  
 O'Connor, Lieut. O.  
 Parkinson, Lieut. J. A.  
 Russell, Sec. Lieut. G. C.  
 Soncal, Sec. Lieut. C. H.  
 Stockman, Lieut. E. J.  
 Wright, Lieut. E. F.  
**Previously Missing, now reported Prisoner in German hands**  
 Macdonald, Lieut. R. M. (Manit.).

Published November 14th

**Killed**  
 Davidson, Sec. Lieut. G. E.  
 Grigg, Sec. Lieut. D. H.  
 Heard, Sec. Lieut. M.  
 Toft, Sec. Lieut. H.  
**Died of Wounds**  
 Bell, Lieut. J. M. G., M.C.  
**Accidentally Killed**  
 Bower-Binns, Lieut. J. (E. Ont.).  
**Drowned**  
 Mellor, Lieut. N.  
**Wounded**  
 Cain, Capt. R. C., D.F.C.  
 Hart, Sec. Lieut. L.  
 Johnson, Lieut. R. F. S.  
 Kemshall, Lieut. J. E.  
 King, Sec. Lieut. E. W.  
 Leiper, Capt. I. W.  
 Lewis, Capt. C. G. R.  
 McArthur, Sec. Lieut. F. L.  
 Nicol, Sec. Lieut. M.  
 Siddaway, Lieut. K. G.  
 Waller, Sec. Lieut. P. J.  
 Warren, Sec. Lieut. J.  
 Watts, Lieut. V. L.  
 Wootten, Lieut. G. B. (New Bruns.).  
**Previously Missing, now reported Wounded and Prisoners**  
 Cole, Sec. Lieut. R. H.  
 Coope, Lieut. N. N.  
 Mantle, Sec. Lieut. H. S.  
**Previously Missing, now reported Missing, believed Wounded and Prisoners**  
 Anslow, Sec. Lieut. F. F.  
 Pretty, Sec. Lieut. H. J.  
**Missing**  
 Arnott, Sec. Lieut. H. D.  
 Goodman, Lieut. G. A.  
 Vickers, Sec. Lieut. J. B.  
**Previously Missing, now reported Prisoners**  
 Chainey, Sec. Lieut. F. H.  
 Down, Sec. Lieut. R. E.  
 Elworthy, Lieut. L. M.  
 Holleran, Capt. O. C.  
 Payne, Sec. Lieut. A. C. J.  
 Reid, Sec. Lieut. J. E.  
**Previously Missing, now reported Missing, believed Prisoner**  
 Manley, Sec. Lieut. P. S., M.C.

Published November 15th

**Killed**  
 Cawley, Sec. Lieut. F.  
 Lettis, Capt. J. H. T.  
 Gibbons, Sec. Lieut. J. E.  
**Died of Wounds**  
 Bickell, Lieut. W. B.  
 Higgs, Sec. Lieut. L. A.  
 Rucker, Sec. Lieut. R. S.  
 Waterer, Sec. Lieut. M. A.  
**Wounded**  
 Creamer, Sec. Lieut. R. C.  
 Hutchings, Sec. Lieut. W.  
 Leslie, Capt. W. A.  
 Wilderspin, Lieut. C.  
**Previously Missing, now reported Wounded and Prisoner**  
 Stephenson, Lieut. W. S., M.C.  
**Previously Missing, now reported believed Wounded and Prisoners**  
 Brown, Sec. Lieut. J. W.  
 Pym, Lieut. F. G.  
**Missing**  
 Cotterell, Sec. Lieut. B. W.  
 Crichton, Sec. Lieut. C. A.  
 Eyres, Lieut. L. H.  
 Farquhar, Lieut. R. W.  
 Goodson, Lieut. E. J. (Aus. F.C.).  
 Hampton, Sec. Lieut. J. H.  
 Maisey, Sec. Lieut. H. C.  
 Nesbitt, Sec. Lieut. W. J.  
 Newby, Lieut. W.  
 Palliser, Lieut. A. J. (Aus. F.C.).  
 Perry, Sec. Lieut. A. F.  
 Rhodes, Lieut. C. W. (Aus. F.C.).  
 Russell, Sec. Lieut. R. F.  
 Stokes, Capt. C. H.  
 Symons, Lieut. P. W. (Aus. F.C.).  
 Trembath, Lieut. N. T.  
 Turnbull, Lieut. T. H.  
 Webster, Lieut. J.  
**Prisoner**  
 Francis, Sec. Lieut. C. E.  
**Previously Missing, now reported Prisoners**  
 Broadbent, Lieut. G.  
 Gormley, Sec. Lieut. A. J. C.  
 Johnson, Lieut. F. R.  
 Mitchell, Sec. Lieut. G. W.  
**Previously Missing, now reported Missing, believed Prisoner**  
 Conover, Lieut. C. C.

Published November 16th

**Killed**  
 Bennett, Sec. Lieut. A. R.  
 Firth, Sec. Lieut. P. R.  
 Horsley, Capt. O., M.C.  
 Isherwood, Sec. Lieut. H.  
 Muir, Sec. Lieut. G. V.  
 Schmolle, Lieut. J. G.  
 Whitehead, Lieut. G. W. E.  
**Previously Missing, now reported Killed**  
 Clark, Capt. A. B., M.C.  
 Brown, Sec. Lieut. P. L.  
**Died of Wounds**  
 Cannell, Lieut. H. F. C. (I.A. Cav.).  
**Died**  
 Dawkins, Lieut. F.  
**Wounded**  
 Anderson, Lieut. G. F.  
 Davis, Sec. Lieut. W. G.  
 Elliott, Sec. Lieut. C. M. W.  
 Fletcher, Lieut. F.  
 Howell, Lieut. J. E.  
 Hutson, Lieut. P. G.  
 Luckley, Sec. Lieut. J. J.  
 Mullen, Lieut. M.  
 Priestley, Sec. Lieut. T. A.  
 Thorn, Sec. Lieut. H. J.  
 Walmsley, Sec. Lieut. H.  
 Wootten, Lieut. G. B.  
 Woodall, Sec. Lieut. W. S.  
**Previously Missing, now reported Wounded and Prisoner**  
 Mackereth, Capt. J.  
**Missing**  
 Boyd, Sec. Lieut. C. N.  
 Buchanan, Lieut. A.  
 Cormack, Sec. Lieut. P. F.  
 Duff, Lieut. R. W.  
 Douglas, Sec. Lieut. A. A.  
 Dyke, Sec. Lieut. E. P. W.  
 Gemmel, Sec. Lieut. H. J.  
 Holmes, Lieut. D. W.  
 Lansdale, Sec. Lieut. H.  
 Lee, Sec. Lieut. E. A. R.  
 Lynn, Lieut. F.  
 Mulhall, Sec. Lieut. H. F.  
 Murray, Sec. Lieut. R. B.  
 Pritchard, Sec. Lieut. J. C.  
 Prosser, Sec. Lieut. J. E.  
 Sleigh, Sec. Lieut. T. W.  
**Previously Missing, now reported Prisoners**  
 Buckingham, Capt. W.  
 Johns, Sec. Lieut. W. E.  
 Kemp, Sec. Lieut. J. E.  
 Kler, Sec. Lieut. J. N.  
 Lacy, Sec. Lieut. J. B.  
 Lloyd, Lieut. J. P.  
 Marchant, Lieut. E. A.

Reported November 18th

**Killed**  
 Brown, Lieut. E. C.  
 Cowper-Coles, Sec. Lieut. S. W.  
 Morgan, Sec. Lieut. F. R.  
 Norris, Sec. Lieut. R. W.  
 Prentice, Sec. Lieut. A. J.  
 Renwick, Capt. H. A.  
 Sedgwick, Capt. F. B.  
**Previously Missing, now reported Killed**  
 Shier, Sec. Lieut. M. R.  
**Died of Wounds**  
 Hunt, Lieut. W. V.  
 Crossland, Lieut. E. F.  
**Died**  
 Alexander, D. G.  
 Bennett, F. J.  
 Everett, F. S.  
 Froom, A. M.  
 Hamilton, W. W.  
 McCallum, R. P. F.  
 Masheder, J.  
 Rayner, E. B.  
 Saunders, H. C.  
 Warden, E.  
**Wounded**  
 Burns, Sec. Lieut. E. S.  
 Dey, Sec. Lieut. F. W.  
 Light, Sec. Lieut. H. E.  
 McKenzie, Lieut. J. V. (W. Ont.).  
 Reader, Sec. Lieut. L.  
 Reed, Capt. W. E.  
 Smart, Sec. Lieut. G. W.  
 Stubings, Sec. Lieut. C. A.  
**Previously Missing, now reported Wounded and Prisoner**  
 Finch, Sec. Lieut. F. E.  
**Missing**  
 Drummond, Sec. Lieut. G. I. P.  
 Hibbert, Sec. Lieut. O. K.  
 Howard, Lieut. G. E. C.  
 Iliff, Sec. Lieut. G.  
 Kidd, Sec. Lieut. J. F.  
 Mills, Sec. Lieut. F. G.  
 Payne, Sec. Lieut. J. M.  
 Scroggie, Lieut. L. C.  
 Segrave, Sec. Lieut. P.  
 Sparks, Lieut. C. P.  
 Stafford, Sec. Lieut. J. F.  
 Tennant, Sec. Lieut. P. S.  
 Wilson, Lieut. H.  
**Previously Missing, now reported Prisoners**  
 Brumell, Lieut. H. P.  
 Chreiman, Sec. Lieut. W. W.  
 Patman, Lieut. G. H.  
 Riddell, Lieut. L. H.  
 Rose, Sec. Lieut. R. H.

Published November 19th

**Killed**  
 Fletcher, Sec. Lieut. C. A.  
 Hunter, Lieut. H. T.  
 McNeale, Sec. Lieut. T. C.  
 Packham, Sec. Lieut. C. T.  
**Previously Missing, now reported Killed**  
 Pierce, Lieut. J. B.  
**Died of Wounds**  
 Crump, Sec. Lieut. F. L. D.  
 Lee, Sec. Lieut. C. P.  
**Died**  
 Fatcher, Lieut. H. E.  
 Loxley, Capt. R. V. B.  
 Price, Lieut. J. W.  
**Wounded**  
 Argles, Sec. Lieut. H. A.  
 Becher, Capt. A. W. B., M.C.  
 Bethune, Lieut. W. J.  
 Philcox, Capt. W. S.  
 Pipe, Sec. Lieut. J.  
 Thomson, Sec. Lieut. F. E.  
 Toms, Sec. Lieut. H.  
**Previously Missing, now reported Wounded and Prisoners**  
 Crossley, Sec. Lieut. H.  
 Farrand, Sec. Lieut. E. S.  
**Missing**  
 Aitken, Sec. Lieut. J. T.  
 Baker, Lieut. T. C. R. (Aus. F.C.).  
 Burden, Sec. Lieut. S. E.  
 Craig, Sec. Lieut. W. D.  
 Grant, Sec. Lieut. H. C. R.  
 Lacey, Lieut. W. G.  
 Rigby, Sec. Lieut. C.  
 Scott, Lieut. F. C. D.  
 Sumson, Lieut. F.  
 Symons, Sec. Lieut. J. G.  
**Previously Missing, now reported Prisoners**  
 Sabey, Sec. Lieut. A. R.  
 Senior, Sec. Lieut. H. H.  
 Sinclair, Sec. Lieut. A. S.  
 Smalles, Sec. Lieut. E. B.

# THE GOTHA BOMBER

## WITH NOTES ON GIANT AEROPLANES

[Issued by Technical Department (Aircraft Production), Ministry of Munitions.]

(Continued from page 1282.)

### Undercarriage

The undercarriages on each side form, with the engine mountings and a small section of the lower main plane, completely independent units. There is no landing wheel under the nose of the machine as is the case in the Friedrichshafen design. Each undercarriage has four wheels. The larger pair are attached to an axle placed immediately under the centre of the chord of the main planes, which point may be assumed to approach very closely the centre of gravity. This axle, as shown in the detail sketches reproduced herewith, moves up and down in guides against the action of two long compression springs concealed within the main undercarriage struts. A stout steel cable is passed over the axle and under two pulleys enclosed in the horn plate; thence it goes up inside the long springs to the heads of adjustable bolts, against which the upper ends of the springs abut. The axle is fitted with a large three-ply fairing attached by means of light straps, and at its outer end terminates in a tee piece,

forced with a steel shoe and with a steel front edge. Fig. 11 also shows the attachment of the lower tail struts to the bottom of the fuselage, and it will be seen that these are provided with sharp bars to discourage mechanics from lifting the tail by their means.

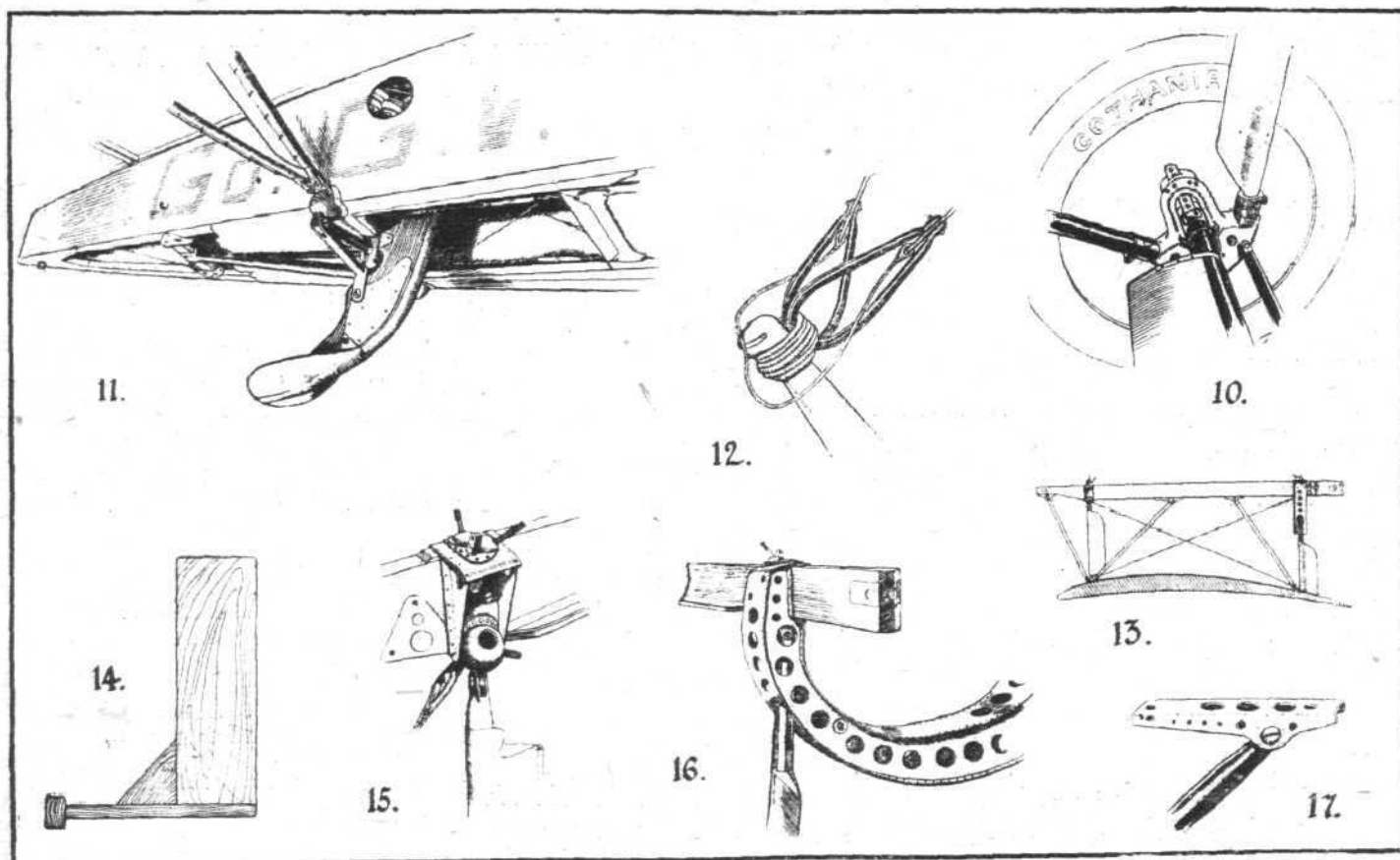
### Engine Mounting

The 260 h.p. six-cylinder Mercedes engines are carried on bearers arranged as shown in the drawing of the undercarriage, and illustrated with more detail in Fig. 13.

The bearers themselves are of wood, and between the main vertical supports on which they rest are of the section shown in Fig. 14. They are attached to these main supports by ball joints of large diameter, and the struts are stream-lined with casings of thin metal. These are shown in Fig. 15.

At their rear ends the engine bearers are united by a curved cross piece of hollow section, built up of sheet steel riveted together. (Fig. 16.)

The engine bearers are triangulated to the plane section



Some constructional details of the Gotha twin-engine bomber. Figs. 10 to 17.

which slides up and down in a slot in the horn plate, and prevents the axle from turning round.

Only the front undercarriage strut is streamlined. It is stayed with a tube to the middle of the rear strut, and at this point the mudguard brackets are fitted.

The front pair of landing wheels, the fitting of which is to facilitate landing in the dark, are supported on an axle attached to the frame extension by bands of steel coil springs of the type usually found in the smaller German designs.

The front wheels are smaller in diameter and narrower in track than the main landing wheels.

In every case the forward extension of the undercarriage was very badly crumpled up, and it is noticeably light in construction compared with the massive main landing gear.

As might be expected, a very stout tail skid is fitted. This is shown in detail in Fig. 11.

The hinged skid is very strongly stayed in all directions. At its upper end it is attached with loops of steel coil springs to two tubular steel rings clipped to either side of the fuselage. A steel cable limits the distance through which the tail skid can move.

The body of the tail skid is of wood, but it is heavily rein-

forced below them by cross wires as shown in Fig. 13, and also by diagonal steel tubes, the latter being attached by feet of the type shown in Fig. 17.

The bracket supporting the bearers in front entirely surrounds them, and at its upper end is provided with an attachment for the strut which unites the engine mounting to the top plane spar, and also with a ball and socket attachment for the undercarriage bracing cables.

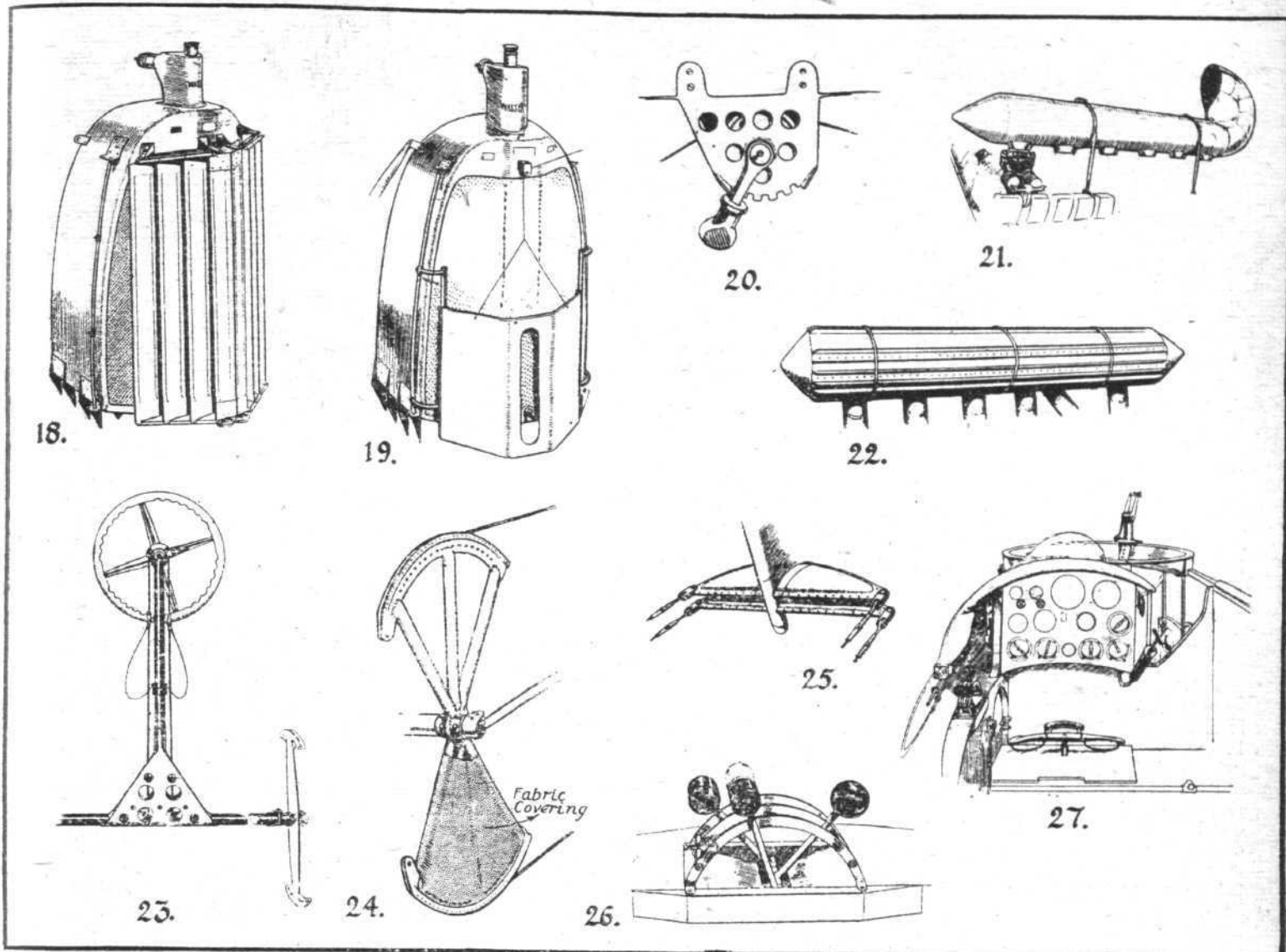
At the bottom of the forward engine bearer support is attached one of the diagonal strengthening members of the forward undercarriage framework.

### Engines

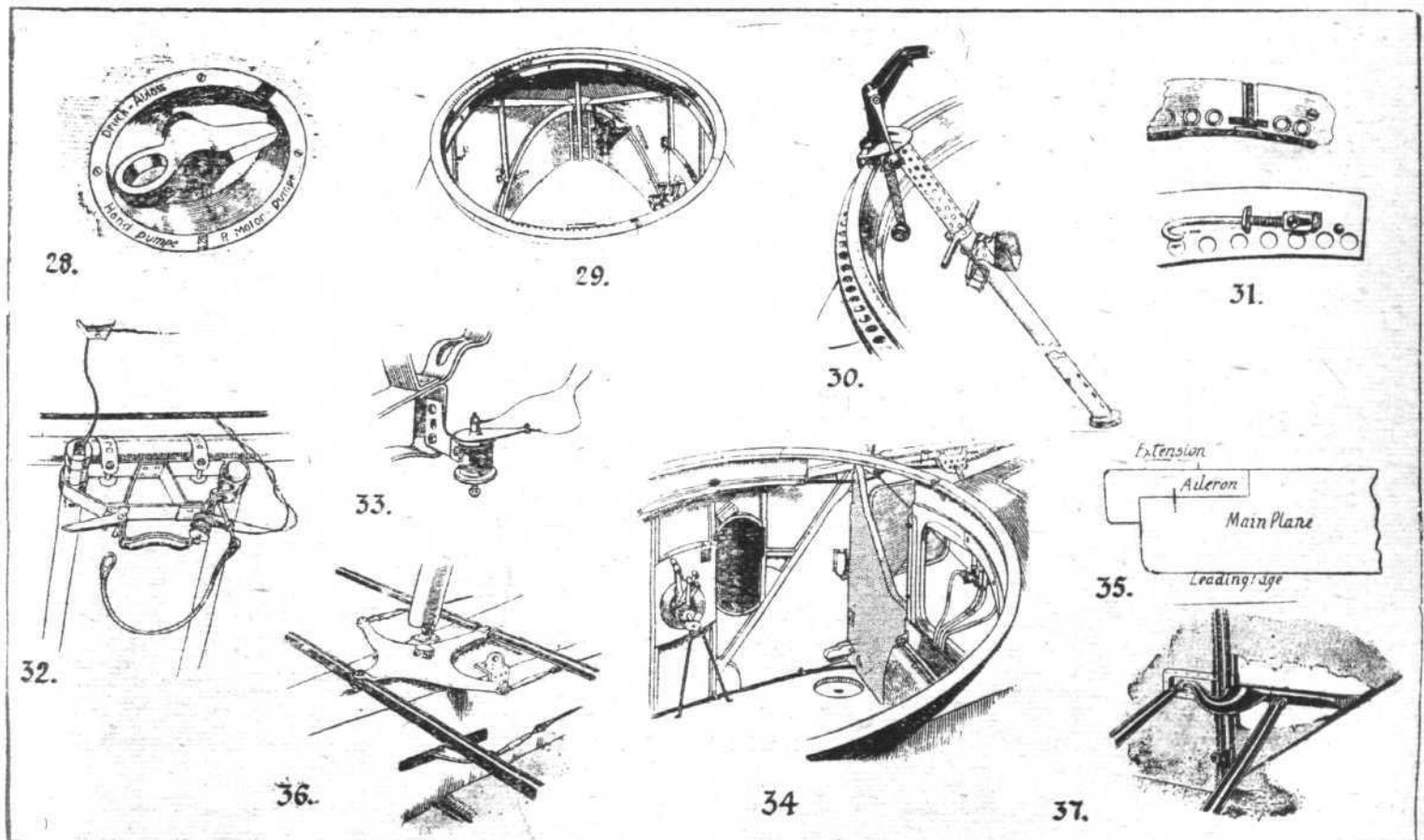
In general the engines show no departures from the usual Mercedes practice, but there are a few points which are worthy of note.

Two different kinds of radiators were employed on machines otherwise exactly similar, the principal difference between these radiators being the arrangement of the shutters; in one case a series of vertical panels is used, and in the other a simple sliding door is adapted to be raised or lowered so as to shield the radiator surface to the required degree.

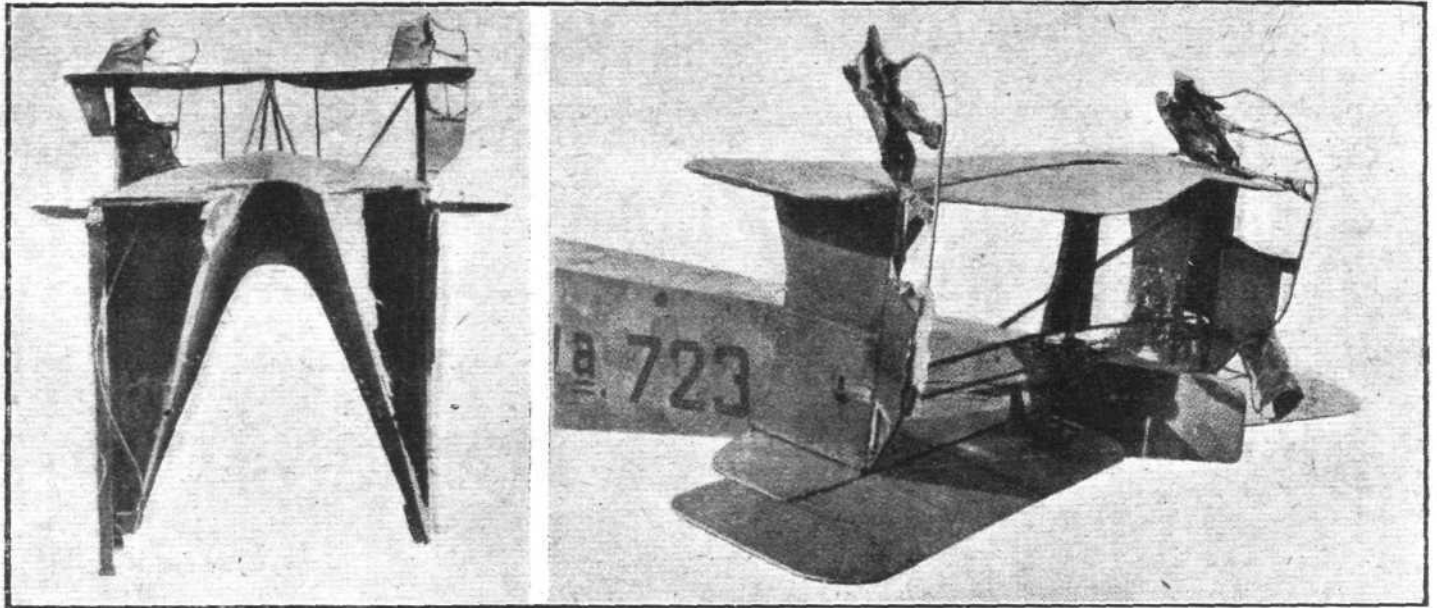




Some more constructional details of the Gotha twin-engine bomber. Figs. 18 to 27.



Constructional details of the Gotha twin-engine bomber. Figs. 28 to 37.



Figs. 38 and 39.—Two views of the biplane tail and fuselage of the twin-engine Gotha bomber. Illustrations and a brief description of this tail were published in our issue of October 3rd.

Electrical thermometers of the usual pattern are fitted.

The radiator controls are placed one on each side of the pilot's cockpit, and are illustrated in Fig. 20.

Five different positions of the lever are provided for, and it works the shutters through return cables passing over a large aluminium pulley.

Two different kinds of silencer were found; the type illustrated in Fig. 21 is similar to that used on previous Gothas, and also on the Friedrichshafen machines. It consists of a sheet steel manifold of very light construction, containing no baffles or other means of restricting the outflow of gas.

The other type of exhaust box is shown in Fig. 22, and in this case it would appear that some attempt has been made not only to silence the exhaust, but also to prevent the aeroplane showing its whereabouts through the exhaust flames.

This new type of silencer has been reported upon as follows:—

The exhaust manifold has been altered in the spacing of the communications in order to fit a B.H.P. engine in a D.H. 9. The manifold consists of a cylinder 3 ft. 9 ins. long and 6 ins. in diameter; pointed nose and tail pieces are welded on, and 14 cooling fins running lengthwise are fitted. Between the fins a number of  $\frac{1}{4}$ -in. diameter holes are drilled, forming a means of outlet for the exhaust gases, no baffle plates being fitted; the whole is made up of 20-gauge sheet steel, and is very flimsy in appearance.

For testing this exhaust as a flame damper, a machine fitted with the manifold was flown at night with no navigation lights, and another machine was sent up to find it. As a silencer the manifold reduces the distance at which the machine is audible by a mean of about 4 per cent. No difficulty was experienced by the observing pilot in picking up the machine; although the flame usually seen at night was broken up, there was a stream of small sparks which made the aeroplane just as visible. In addition, it was noticed that the manifold became red hot when the machine was flown at full throttle.

#### Controls

All the Gotha machines brought down were fitted with the same type of control, though certain detail differences are noticed.

The ailerons are worked by a large diameter wheel by means of a chain and sprocket as shown in Fig. 23.

Limiting cables are fitted and attached to an adjustable clip on the column.

The wires are passed over pulleys, and issue through the ends of the transverse rocking shaft, whence they pass through the planes between the leading edge and the leading spar of the lower wings.

At the extreme outer interplane strut they are taken over pulleys to the levers of the upper ailerons, which are connected to those of the lower ailerons by a light streamline strut. The horizontal rocking shaft extends through the side of the fuselage, and is there fitted in some cases with the simple form

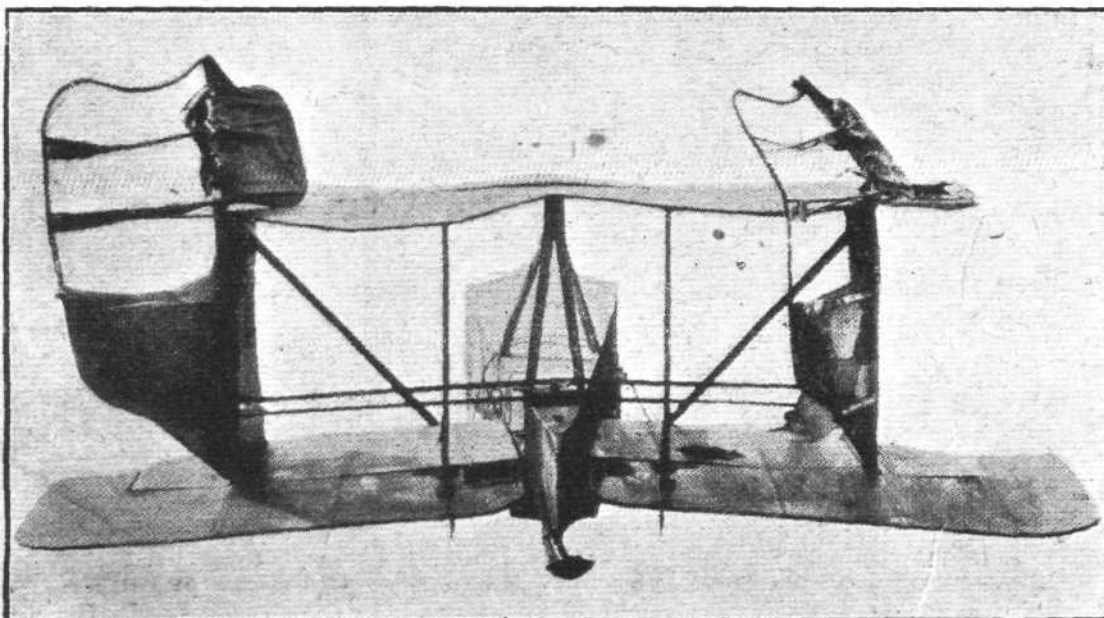


Fig. 40. — Rear view of biplane tail of the twin-engine Gotha.



of double-ended crank shown in Fig. 23, but in others with the quadrant type of lever built up of steel tube, and illustrated in Fig. 24.

The elevator and rudder wires are led along the outside of the fuselage through guides.

The control wires for the elevator are duplicated, and in the case of the rudder a double crank is fitted on the rudder post. This is shown in Fig. 25.

The rudder control bar is of the usual welded-up steel type, and is fitted with spring controlled heel rests. It is fitted with a grooved quadrant carrying the wires which pass over pulleys mounted in brackets on the inside of the fuselage walls. The rudder bar is shown incidentally in Fig. 27. No form of dual control is fitted. It is, however, of interest to note that whereas in the Friedrichshafen design means are provided both for adjusting the trim of the tail and for locking the controls in any desired position, the Gotha machine possesses neither of these refinements.

#### Engine Controls

The throttle levers are fitted on the left-hand side of the pilot's seat, which is also on the left-hand side of the fuselage. This control consists of two mallet-headed levers, which are shaped so as to be conveniently worked either together or separately; the cranks and rods which they operate are placed outside the main section of the fuselage, and are covered in with a streamline metal casing.

The engines are fitted, as is the usual Mercedes practice, with combination ignition and throttle controls; the function of the ball-headed third lever is not precisely known.

In front of the pilot is a dashboard arranged as shown in Fig. 27, containing the usual switches, gauges, instruments and control taps. One of the latter is shown in more detail in Fig. 28.

#### Petrol System

The two main petrol tanks carried in the forward position of the fuselage are equal in size, and have a joint capacity

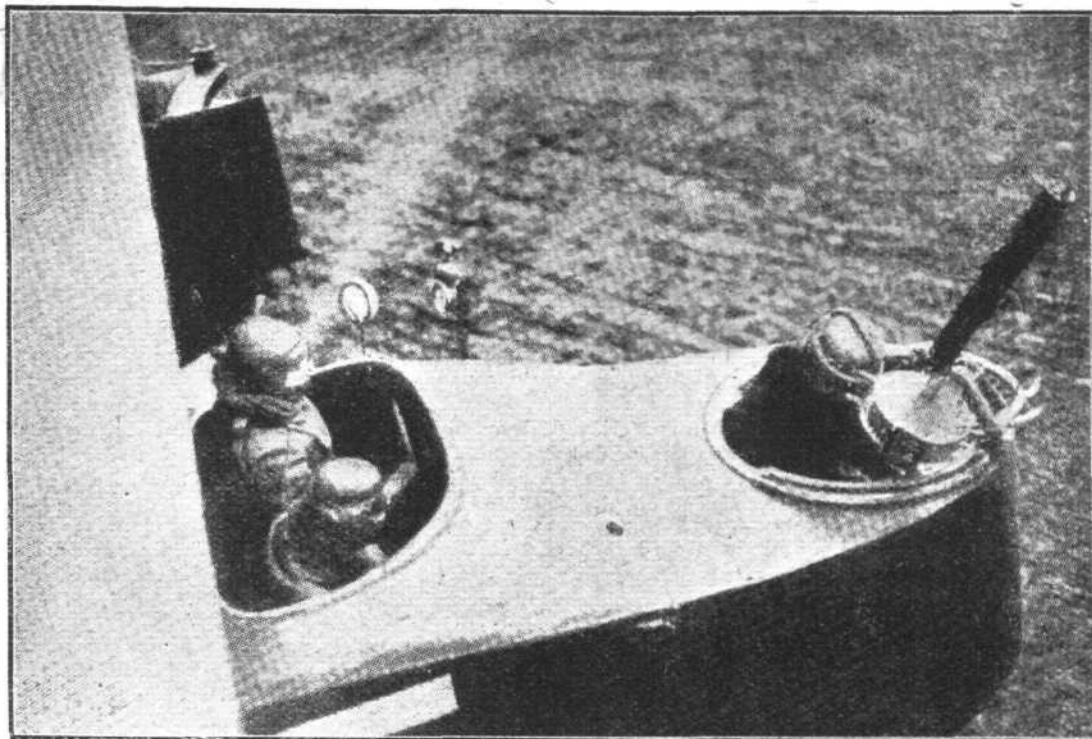


Fig. 41.—Twin-engine Gotha. Front of fuselage. Note Morell anemometer air-speed indicator.

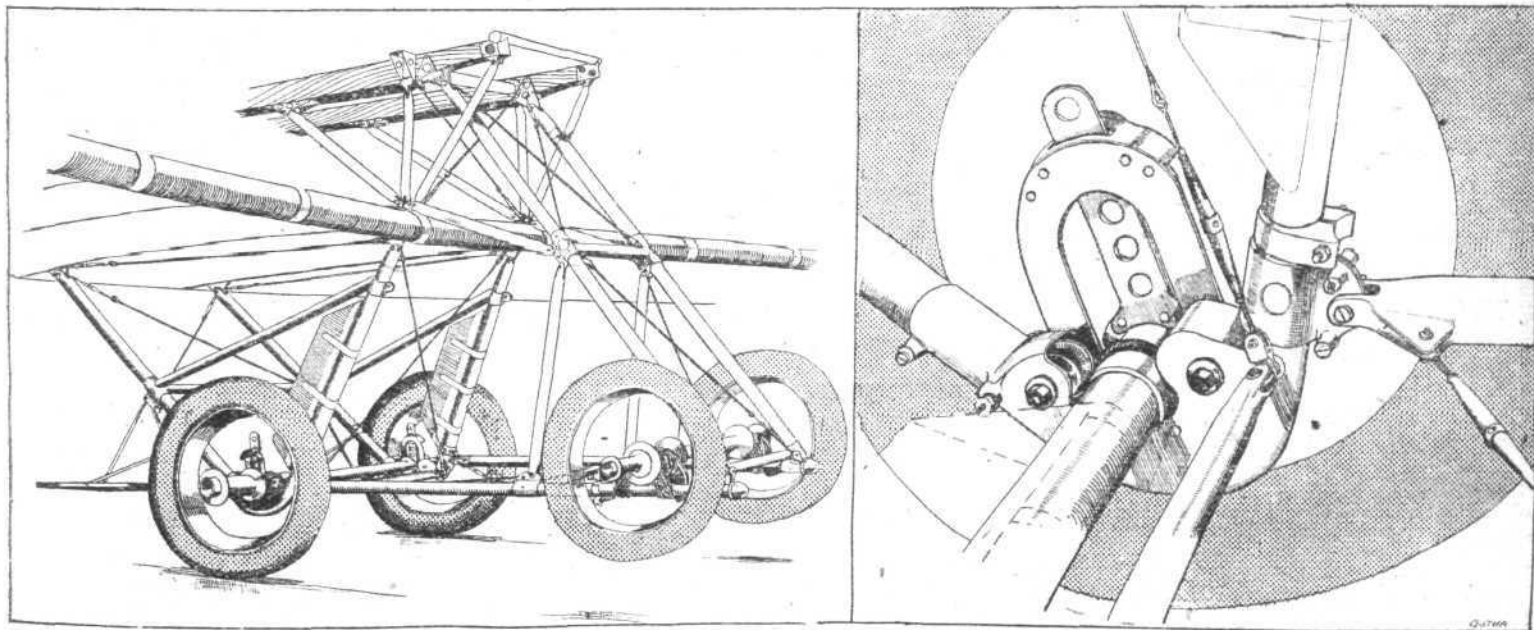
of 175 gallons. They are made of sheet brass, and appear to be well provided with internal baffle plates.

On the left-hand upper wing, slightly to one side of the centre line of the machine, is a streamline gravity tank, strapped on to the upper surface, above which it projects; this gravity tank, which is used solely for starting purposes, has a capacity of about 10 gallons. It is filled from one or other of the main tanks by means of a hand-operated suction pump mounted on the right-hand side of the pilot's dash board, as shown in Fig. 27.

The two main tanks work under pressure; an air pump of the usual type is mounted within reach of the pilot.

#### Armament

Two Parabellum guns are carried—one in the forward cockpit, and one in the rear. The former is carried on a large ring mounting, which is shown in Figs. 29 and 30. In order to allow access between this cockpit and that of the pilot, part of the ring is made to hinge out of the way like the flap of a counter. The ring is extensively perforated with counter-sunk holes, apparently for lightening purposes. The holes of



Three-quarter front view of one of the four-wheeled Gotha undercarriages. On the right a more detailed drawing of the shock-absorbing arrangement.

"Flight" Copyright

the hinged portion, together with the latch which secures them, are shown in Fig. 31. The gun is carried on a universally jointed bracket of the accepted design, which is furnished with an inclined extension, supported from the floor of the fuselage by a foot step bearing.

The gun carrier is fitted with two steel rollers, which rest on the ring mounting, outside of which is mounted a gallery of light metal fitted with numerous holes for the reception of Very pistol ammunition.

The rear gun is carried on a forked bracket, which slides over two rails made of bent steel tube, and mounted on the top surface of the fuselage as illustrated in Fig. 7. This gun carriage has a very limited arc of motion, and the usual expanded metal shields are fitted to prevent the gunner firing at the propeller, and possibly to prevent him leaning out far enough to be in danger of being struck by one of the blades.

On the floor of the after gunner's cockpit and close to the edge of the tunnel is a bracket designed for the reception of a second gun which would fire in a similar manner to that which was fitted on the earlier Gotha types. No guns fixed in this position have been found, and it is evident, therefore, that the upper gun is relied upon to answer all defensive requirements.

## Bombs

The number and type of bombs carried on Gotha aeroplanes varies considerably, and the carriers are in consequence adapted to be easily removed and replaced by others of larger or smaller size, as the case may be.

The carriers used on the Gotha are exactly similar to those which have been found on A.E.G. and Friedrichshafen machines, and present no new features, with this exception, that on the Gotha each carrier is furnished with an electrical detector device which informs the bomber that the projectile has actually left the carrier. This detector consists of a small switch, details of which are shown in Figs. 32 and 33, so that when the bomb leaves the carrier an electric lamp is illuminated inside the forward cockpit; this is carried out by means of a small spring-operated plunger switch.

As a rule, eight bombs, each of 100 kg. weight, are carried—two being supported directly under the fuselage, and three on either side of the bottom plane centre section. Their release is effected by six small levers working the release gear through wires; each of these levers is painted a characteristic colour, and they are furthermore of different lengths, so that the bomber has no difficulty in pulling the right one. It would appear that each bomb carried on the centre section of the lower plane is released separately, and that probably the two bombs underneath the fuselage are discharged simultaneously. The levers are shown at the back of Fig. 34, which also illustrates the folding seat and the communication flap between the bomber's cockpit and that of the pilot. Both the forward cockpits are furnished with large celluloid windows, which have been blacked over in all cases so as to be opaque.

## Wireless

The machine is internally wired throughout for giving greater wireless capacity, and the dynamo for the system is

## Back from Turkey

It is notified by the War Office that the following officers have arrived at Alexandria from captivity in Turkey:—

Capt. E. A. Floyer, I.A.R.O., attd. R.F.C.  
Capt. B. S. Atkins, I.A., attd. R.F.C.  
Flight-Commander T. R. Hackman, R.N.A.S.  
Flight Sub-Lieut. W. E. Foster, R.N.A.S.  
Lieut. T. E. Lander, H.L.I., attd. R.F.C.  
Lieut. S. J. Wise, R.N.A.S.  
Lieut. A. Ward, R.N.A.S.  
Lieut. C. E. S. Palmer, R.N.V.R.  
Lieut. C. W. Hill, R.F.C.  
Lieut. J. B. Welman, R.F.A. and R.F.C.  
Capt. D. W. Rutherford, Aust. F.C. (Half Flight).  
Lieut. L. W. Heathcote, Aust. F.C.  
Lieut. V. J. Parkinson, Aust. F.C.  
Lieut. L. H. Smith, Aust. F.C.

## Back from Austria

The following officers who were prisoners in Austria, have been released:—

Lieut. R. J. Bevington, R.F.A., attd. R.F.C.  
Lieut. W. Gilchrist, Rif. Brig., attd. R.F.C.  
Lieut. W. A. Maclean, Black Watch, attd. R.F.C.

## From Germany

The following soldier who was a prisoner of war in Germany has now arrived in England:—

R.F.C. 1840 D. McMaster.

driven direct by one of the engines. It also furnishes current for the heating of passengers' clothing, for which plugs are arranged at convenient points.

It will be noted in Fig. 34 that the floor in the corner of the cockpit is dished for the reception of the apparatus which carries the bobbin and the aerial wire.

## Instruments

The usual array of engine revolution counters, thermometers, pressure gauges, &c., is fitted on the Gotha, but no new types were found.

## Fabric and Dope

Both the fabric and dope on the Gotha aeroplanes conform to the usual German standard. The camouflage is similar to that of the Friedrichshafen, and consists of irregular polygons of various dark colours, which are printed on the fabric.

## Gotha brought down by French A.A. Fire near Crochte, on July 4th-5th, 1918.

The general construction of this machine appears to be similar to that described above in most respects, except for three modifications, which are worthy of note:—

1. A biplane tail unit. This is illustrated in the photographs, Figs. 38, 39 and 40. It is similar in design to that of the Handley-Page, and embodies two fins on either side of the fuselage between the planes of the tail. The rudders are hinged to the trailing edges of these fins. The measurements of the tail unit are as follows:—

Top elevator span	..	..	5 ft. 7 in.
Top elevator chord	..	..	2 ft. 7 in.
Bottom elevator span	..	..	5 ft. 3 in.
Bottom elevator chord	..	..	1 ft. 6½ in.
Balance piece	..	..	11½ in. by 10½ in.
Gap	..	..	2 ft. 9½ in.
Bottom tail planes each average fore and aft measurement	..	..	2 ft. 5 in.
Span along trailing edge, each	..	..	4 ft. 2 in.
Top tail plane, average fore and aft measurement	..	..	2 ft. 5 in.
Span along trailing edge	..	..	8 ft. 10 in.

This tail unit would appear to have been adapted in order to give the after gunner a better chance of attacking chasing aeroplanes, as the span is considerably smaller than that of the monoplane tail. It is constructed throughout of steel tubing.

2. Extensions are fitted to the top ailerons as shown in the attached diagram (Fig. 35); it would appear from these that the lateral control of the Gotha has been found insufficient.

3. The undercarriages are arranged in a similar manner to those of the Friedrichshafen, that is to say, there is a two-wheeled undercarriage underneath each engine, and a third two-wheeled axle mounted on to the fore part of the fuselage; the wheels throughout are of equal size, carrying 810 by 125 mm. tyres.

Some details of the tail control are given in Figs. 36 and 37, from which it will be seen that double-ended levers with tubular tie rods are adopted for the rudders.

(To be continued.)

## Aircraft and Bombardment Insurance Policies.

As inquiries are being made, the Board of Trade give notice that all aircraft and bombardment insurance policies under the Government Scheme which now fall due will be regarded as being renewed without payment of premium.

## Release of Pivotal Men from the Colours

ALTHOUGH general demobilisation has not been started, arrangements have been made for the early release of "pivotal" men from the Colours. All enquiries relative to the release of officers and men on occupational grounds must now be addressed to the Demobilisation and Resettlement Department of the Ministry of Labour, 6, Whitehall Gardens, S.W. 1. An employer who wants to have a man earmarked for early release must fill in full details such as regimental number and unit, on a special card (E.D. 406), which can be obtained from Employment Exchanges.

## Release of Munition Workers

THE Minister of Munitions has made an Order permitting the employment on work other than munitions work of workmen who since August 21, 1917, have been employed on the manufacture or repair of arms, ammunition, vessels, vehicles, aircraft and other articles intended for use in the war; and of metals, machines, tools, or materials required for such manufacture or repair.

The Order is called the Ex-Munition Workers Employment Order, 1918.



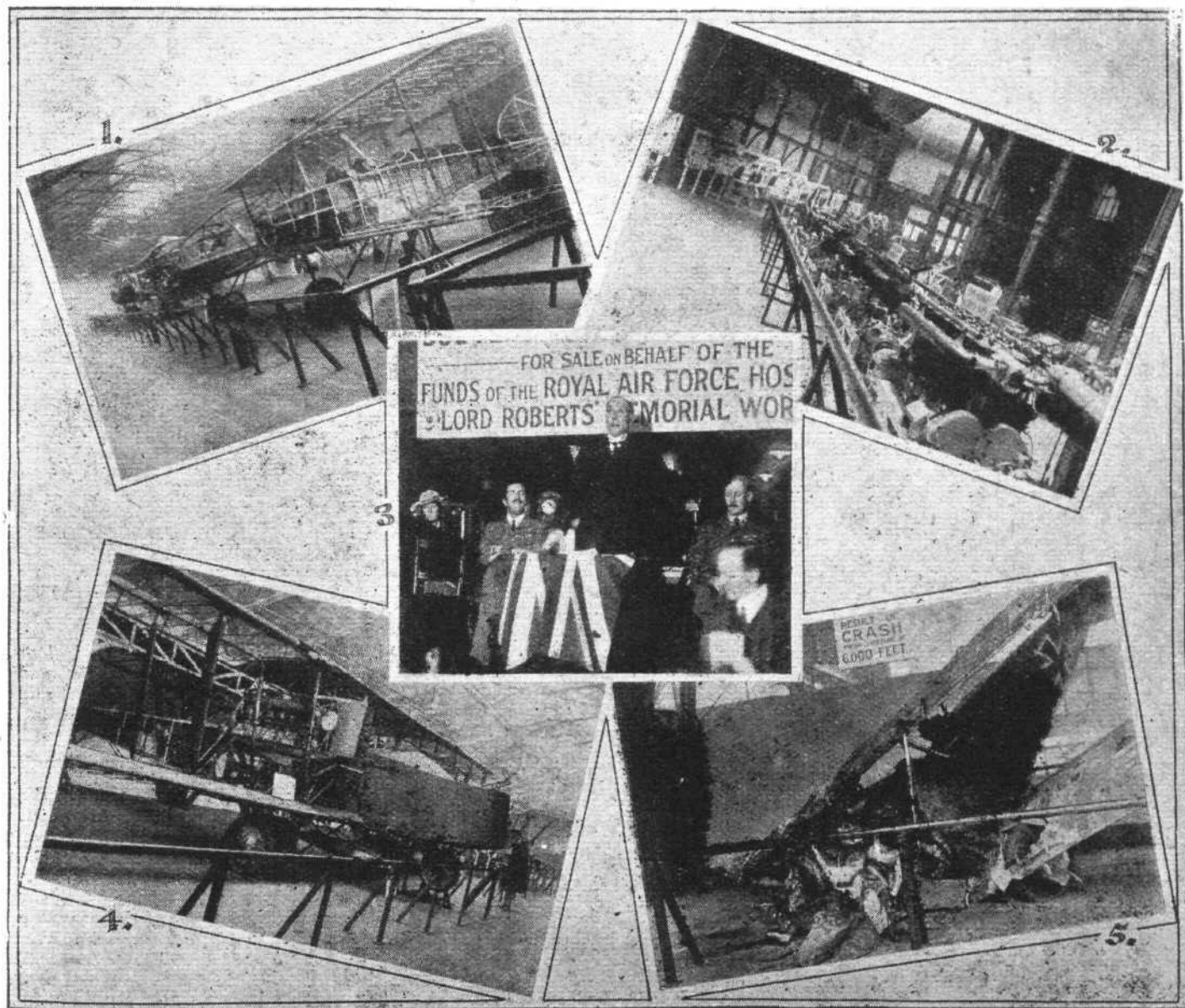
## LORD WEIR ON FUTURE OF AVIATION

OPENING the Enemy Aircraft View Rooms at the Agricultural Hall, Islington, on November 15th, Lord Weir, Secretary of State for the Royal Air Force, said that the exhibition was confined to samples only of enemy aircraft, and did not constitute a complete and real collection of trophies. Somewhere overseas that day Germany was arranging, for the benefit of the Allies, a far finer and more complete exhibition of German aircraft—2,000 in number. At the outbreak of war both France and Germany had a considerable lead over this country both in military aviation and in the industrial field, which was the foundation of any technical strength of any air force. To-day the Royal Air Force of the British Empire was regarded as supreme and predominant in every branch. In six months of 1918 the Air Force units working with the Armies in France alone took a quarter of a million photographs, each of which yielded about 30 prints. These consisted of vertical photographs for the artillery and oblique photographs for the infantry. The work involved photography of practically every acre of ground in 6,000 square miles of territory. Reconnaissance and general observation, which covered general scouting and observation work of all enemy movements up to 50 miles behind the line, had been developed by means of the use of photographs taken at night with the aid of flares, and in this way the movement of troops by night were discovered. Bombing of communications and back areas was carried out mainly by machines designed for the purpose, but latterly almost every machine which went over

the enemy lines, apart from fighting machines, carried a few bombs for use on any suitable target which might be met with. The growth of the total weight of bombs dropped was remarkable. During the whole of 1917, 1,000 tons of bombs were dropped. In the first six months of 1918 the Air Force units on the Western Front alone dropped over 5,900 tons. The Air Force had also advised the Command in infantry attacks of difficulties met with and the progress made. The actual co-operation of infantry and Tanks during an attack was a function initiated and developed entirely by the Royal Air Force, and in recent battles aircraft were used to carry up supplies of ammunition, and even of food, to advanced positions. During the advance in Belgium in September, on one day no less than 13 tons of supplies were carried up. Since January 1st, 1918, on the B.E.F. Western front alone, 2,967 enemy machines had been destroyed, and 1,333 driven down out of control. The cost to us had been 1,500 machines missing, which included losses of all kinds, and did not represent fighting losses only.

In the other theatres of war similar service had been provided, with results equally good, and there was little doubt that it was largely due to the work of the Air Force that our victory in Palestine was rendered so sweeping and complete. Maj.-General W. G. H. Salmond, the Officer Commanding R.A.F. in Palestine, wrote:—

"The mastery of the air was utilised to the utmost, not only in denying all information to the enemy, but also in rendering all plans for an orderly retirement quite impossible. No



At the Opening of the Exhibition of Captured Enemy Aircraft, Agricultural Hall, Islington.—1. A row of captured enemy aeroplanes. 2. Some of the captured aero engines, of which a great number are now on view at the exhibition. 3. Lord Weir making his speech at the opening ceremony. 4. A Friedrichshafen bomber at the exhibition. 5. A reconstruction of a crash from 6,000 ft. The machine is an Albatros.



sooner was a retirement started than it was brought to an end by the overwhelming action of the aircraft on the retreating columns. The result was that in 36 hours the right wing of the enemy was in complete disorder, and this extended to his centre, and ultimately to his left wing. In every case the retreating columns were brought to a standstill within 7 miles of their original point. To this the action of the Air Force, by its extraordinary and decisive effect on the operations in so short a time, was, in my opinion, due."

Speaking of the Naval Air Service, Lord Weir said that German submarines had feared no enemy more than the wireless-carrying aeroplane engaged on patrol work, out of sight of land in many cases, work carried on by means of aeroplanes which could only keep afloat for a few hours, the only landing places sometimes being a minefield where rescue was impossible. Innumerable reconnaissances had been carried out by which flying boats had penetrated from our coasts right into the Bight of Heligoland itself. Many reconnaissances of great importance had been carried out from the ships of the Fleet themselves. The bombing of Durazzo involved a flight overseas of 340 miles. No ship had ever been sunk which had been under aircraft escort. Aircraft in co-operation with the Navy had contributed in a large measure to the maintenance of the bulldog grip and the elimination of the U-boat peril.

The Independent Air Force had been criticised chiefly as a dispersion of effort. He had to admit that he was in thorough agreement with that, but the effort that had been dispersed was Germany's, and nothing in the war had caused such a gigantic diversion of Germany's effort, of Germany's manpower, as the moral and destructive influence of the work done by the Independent Air Force. More evidence of the effectiveness of the Air Force in general had yet to come; we still had to hear from the enemy.

The Air Force had been criticized for not standardizing its types. It had standardized its types, but not unduly. Standardization before a proper state of development had been reached presented a very great danger, and into that danger Germany fell. In that lay one reason for the superiority of our Air Force. The number of potential

pilots and observers in training last week represented 22,000 persons.

He was not a pessimist in regard to commercial aviation. The possibilities, he thought, were great, the probabilities were not so great. He referred to the immediate future. A word of caution was necessary against those who predicted an immediate far-reaching and successful development of commercial aerial enterprise. The actual practical limitations were still great, and just as at the beginning of the war we had to look forward to a period of pioneer work for military aviation, so we must look forward to pioneer work in commercial aviation. In that work, which would be extensive, the State must play a large part and must continue to play a part. It had supported the industrial development of aviation throughout the war, and he considered that it must assist that development and training until commercial aviation was well on its feet. He was in a few days meeting representatives of British aircraft manufacturers, and had hopes that by discussion and agreement with them methods might be devised by which the State might be enabled to lend its support to the industry in the difficult times which were coming. He could promise that the existing restrictions on the activity of those who desired to be energetic in commercial aviation would be removed very quickly indeed.

The general joy at the glorious end we had now achieved had, perhaps, in the case of the R.A.F. and the industry been slightly tempered by regret that the times did not permit certain ambitious enterprises to be undertaken. Machines designed and developed for extreme range work must now be devoted to more peaceful ends, and to demonstrate to the world by means of long voyages from the homeland to different parts of the Empire the latest and most outstanding examples of our designers' abilities, which not only show the possibilities of aerial transport, but help to maintain and develop the most remarkable of all the many industries of the war, an industry which to-day is able to produce in 24 hours more completed aeroplanes than the entire total establishment of the Royal Air Force when the war broke out. It would be the function of the State to help it over its difficult times.

## THE OPENING OF THE ENEMY AIRCRAFT EXHIBITION

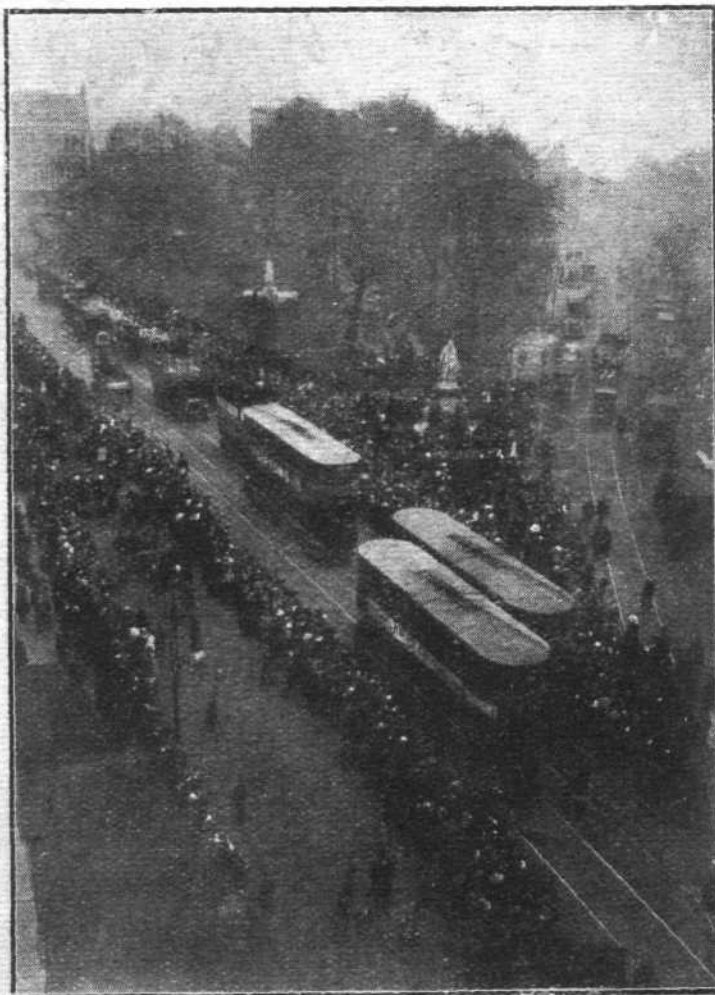
ON Friday of last week (November 15th) the exhibition of captured enemy aircraft, held at the Agricultural Hall, Islington, was opened by the Right Hon. the Secretary of State for the Royal Air Force (Lord Weir), who made a very important speech to which reference is made elsewhere. After the opening ceremony the exhibition was opened to the public, who thus had, for the first time, an opportunity of examining at close quarters the numerous captured aeroplanes and their accessories. To readers of "FLIGHT" many of the exhibits will be familiar through detailed illustrated descriptions. In addition to the captured aeroplanes, which include large bombers, smaller two-seater general utility machines, and single-seater fighters, there are on view a great number of engines, instruments, tanks, machine guns, &c., from which the careful observer will be able to form a very good idea of the state of aviation in Germany. The machines are housed in the gallery of the main hall, which has been partitioned off so as to hide the ground floor of the large central hall which does not form part of the exhibition. In the front entrance hall on the ground floor are housed the engines, many of which have been dissected so as to show more readily their internal construction, and the smaller accessories.

The exhibition is open to the public from 10 a.m. to 8 p.m. on Mondays, Wednesdays, Thursdays, and Saturdays until January 18th. The admission is 1s., and the proceeds will go to the Royal Air Force Hospital Fund. Passes will be issued to manufacturers for the benefit of designers, heads of departments, charge-hands, &c., as hitherto, on application in writing by the employers to C.T.D., Ap. D.(L.), Central House, Kingsway. These passes, however, will only be available for admission on Tuesdays and Fridays, when the general public will not be admitted. On Saturday and Monday the number of visitors to the exhibition was well over 15,000.

### A Real Aeroplane as a Prize

To stimulate interest in aeronautics the Air Ministry is offering, to the public schools whose members send in the greatest number of essays of equal merit as a result of a visit to the exhibition, a complete German aeroplane as a permanent memento.

A similar task has been set for the Boy Scouts movement, the award being a German engine.



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At the opening by Lord Weir of the Enemy Aircraft Exhibition at the Agricultural Hall, the proceeds of which will be handed over to the Air Force Hospitals and kindred charities. The scene outside the Hall in Upper Street, Islington.



## FORTY-ONE UP—AND ROOM FOR MORE

ON November 15th, 1918, a world's record was created for the largest number of passengers ever carried in an aeroplane, when Clifford B. Prodger, an American pilot, took a Handley Page four-engine super giant biplane with 40 passengers on board (in addition to himself) for a cruise over London at a height of 6,500 ft. In addition to this load, petrol was carried for a six hours' flight so that these 40 passengers could easily have been carried across the Channel to Paris had circumstances permitted.

The passengers included Lord Lisburne and the following members of the Empire Press Union:—Mrs. Everard Cotes, Miss Anne Merrill, Miss E. L. C. Watson, and Messrs. A. Harrington, G. H. Scholefield, N. E. Nash, J. E. Hodgson, R. McEvoy, J. Sevestre, R. W. Trowsdale, John Murrow, P. M. Bussy, H. Gastrell. There were also on board Mrs. Welch, Miss Margaret Groom, Miss Margaret Lillie, Miss G. Murray, Mr. and Mrs. Bruce Douglas, Messrs. J. E. Hamerton, Arthur Mee, J. S. Preston, Geoffrey Watson, A. L. Watson, W. L. Copperthwaite, J. Neilson, guests; and Miss D. Chandler, Miss Margaret Spiess, Messrs. G. H. Cooke, A. H. Foch, B. F. Clark, W. H. Taylor, W. Wilding, P. Houston, M. S. Catchwick, P. S. Pearce, T. Ley, J. J. Baird and C. A. Peat (the latter in charge of the pumps).

The weather and time of day were not ideal from the passengers' point of view, as there was a tendency to mist, and the light was already fading by the time the machine was ready for this, its maiden trip. For these reasons the trip had to be cut short of original intentions, but on the other hand the passengers were able to view from above the clouds the setting of the sun and the simultaneous rising of the moon. On returning to land flares were lit on the aerodrome to assist the pilot to locate it. The flight commenced at 4.12 and the landing was made at 4.45 p.m. The total weight of the passengers was 6,022 lbs.\*

This flight, as Mr. Handley Page observes, marks a new era in aviation, as it is the first trip made with such a large number of people on board and sufficient petrol for a continuous flight. A large number of passengers will reduce the cost of aeroplane transport to a point where the average traveller desirous of saving time will pay the aerial omnibus fare when he might have objected to paying the cost of a special car.

\* The machine itself was a standard bomber complete in all respects even to the bomb carrying and release-gear and gun-mounts.



Mr. Handley Page, the designer of the 40-passenger aeroplane which flew over London on Friday, and the pilot of the machine, Mr. Clifford B. Prodger.



The group of 40 passengers in the Rolls-Royce engined Handley Page aeroplane which, piloted by Mr. Clifford B. Prodger, flew over London last Friday afternoon.

## THE LONDON-TO-PARIS AIR SERVICE

### FIRST STEP IN POST-WAR COMMERCIAL AERONAUTICS

If promptitude counts for anything, the prospects for commercial aviation after the War are certainly bright, for scarcely had the armistice been established as an accomplished fact when it was made known that at least one firm is ready to inaugurate an aerial passenger service as soon as conditions permit. Mr. G. Holt Thomas, managing director of the Aircraft Manufacturing Company and various other enterprises, informed a "FLIGHT" representative that arrangements have already been made for a passenger service between Paris and London. As Mr. Holt Thomas points out, the fact that British celestial rights end in mid-Channel will practically preclude all-British companies from establishing international air routes, and for aerial mail routes at any rate the rights of both countries concerned in the enterprise will have to be considered.

With regard to the proposed London-to-Paris passenger service, the arrangements at this end will be in the hands of Aircraft Transport and Travel, Ltd., a company registered by Mr. Holt Thomas, and which is under the same direction as the Aircraft Manufacturing Co., Ltd., and other aviation enterprises in which Mr. Holt Thomas is interested. In France the interests of the company will be looked after by an allied company, the Compagnie Générale Transaérienne, of which M. Henri Deutsche de la Meurthe, whose generous support of aviation is well known to readers of "FLIGHT," is President. It is proposed to make the Ritz Hotel, Piccadilly, the starting point at this end, while the French terminus will be the Ritz Hotel, Place Vendôme, Paris. The timetable that has been drawn up, and which, with the machines it is proposed to use, it should in most cases be quite possible to adhere to or even to improve upon, is as follows:—

Departure by motor car, Ritz Hotel,	
London .. .. .	10.0 a.m.
Departure from London aerodrome ..	10.30 a.m.
Arrival Paris aerodrome .. .. .	1.0 p.m.
Arrival Ritz Hotel, Paris .. .. .	1.30 p.m.

The fare has at present been fixed at 15 guineas, which will, it is expected, include an insurance for £1,000 for each passenger.

The first ticket at £15 15s. was purchased on Friday by the Hon. Sir Arthur Stanley, M.P., chairman of the Red Cross Society, while other purchasers of tickets on that day were Mr. E. Manville, chairman, Associated Chambers of Commerce; Mr. Percy Martin, managing director, the Daimler Co.; Mr. Julian Orde, secretary, Royal Automobile Club; Mr. H. J. Irish, Sir John and Lady Shelley Rolls, Lieut. Guy A. Reed, U.S.; Mrs. Robert Rankin (three tickets), the Hon. Kathleen Robson (two), Mrs. Alec Tweedie, Mr. A. E. Nathan, and Mrs. Locke King.

The machines to be used at first will be of a type that was designed for quite a different purpose, i.e., for long-distance raids into Germany, but with very little alteration they will

be very suitable for the more peaceful purpose to which they are now being put. To many of "FLIGHT" readers the machines will be familiar, but it might be mentioned that they are known as de H. 10's. Like all the other famous machines produced by the Aircraft Manufacturing Co., they were designed by that firm's distinguished designer, Capt. Geoffrey de Havilland, whose designs have played such an important part in the aerial supremacy of the Allies over Germany. These machines are twin-engined bombers, but not of such a large size as others which have been employed for long-distance bomb raids. They are, however, very fast—somewhere about 130 m.p.h.—so that it may be confidently expected that, except under extraordinarily bad weather conditions, an average speed over the ground of 100 m.p.h. will be maintained.

Although as passenger carriers they will not be called upon for such performances, it might be mentioned, to allay any possible nervousness of prospective passengers, that these machines have been looped by the late Capt. B. C. Hucks, a performance which was at one time thought to be impossible on a twin-engined machine. We mention this because a machine which will stand up to the stresses of looping the loop may be relied upon to be amply safe for the ordinary straightforward flying which it will be called upon to do as a passenger carrier.

Tickets may be obtained from the Ritz Hotel, London, and the passengers will be carried in the order in which they purchase the tickets.

Interesting as this first London-to-Paris service is, it is only the beginning of after-the-War aeronautics, and Mr. Holt Thomas informs us that he has several other enterprises well under way. In addition to the Franco-British companies mentioned above, the companies in which Mr. Holt Thomas is interested are allied to the *Societa Transporti Aeri Internazionali* in Italy, and in Norway to *Det Norske Luftfartrederi, Aktieselskap*, with a view to establishing an aerial mail service between Stavanger and Aberdeen. It is further expected that the *Aerial Transportation Co.* of India will link up the British, French and Italian routes by a route from Italy to India, while arrangements are also completed for another route throughout Africa, from Cape to Cairo.

With such energetic measures already being taken, we may confidently expect commercial aviation to become an established fact within a not very distant future, and Mr. Holt Thomas is to be congratulated upon his prompt readiness to show that, even if it be not possible to turn the swords into plough-shares, it is at any rate quite feasible to turn the war aeroplane into a machine assisting mankind in its peaceful pursuits. To those who have regretted the purpose to which the aeroplane and its wonderful capabilities have been put in this War by an unscrupulous enemy this augurs well for the future.

## FLYING AT 28,900 FEET. WORLD'S RECORD

### U.S. AIRMAN RELATES HIS EXPERIENCES

From a Washington Correspondent.

CAPT. R. W. SCHROEDER, of the United States Army Air Service, who made a new air record flying to an altitude of 28,900 ft. over the State of Ohio on September 18th, which record has been officially confirmed, has written an interesting report of his sensational exploit. His story, which is in the form of an official report to Major General Kenly, director of military-aeronautics, is a fascinating recital.

Following is Capt Schroeder's story:—

"In order to take an airplane to a higher altitude than any other pilot in the world, I found that it would require more than one or two attempts. I made three attempts. The first one took me to 24,000 ft., the second to 27,000 ft., and the last one to 28,900 ft., but now I feel certain that I can get to 30,000 ft.

"The cold thin air is one's greatest adversary. First of all, one must make a study of the performance of his motor at these high altitudes. I took off at 1.45 p.m. Wednesday, September 18th, 1918, and made a steady circular climb, passing through clouds at 8,000 ft., 12,000 ft., and 16,000 ft. At 20,000 ft., while still climbing in large circles, my goggles became frosted, making it very difficult for me to watch my instruments.

"When I reached 25,000 ft. I noticed the sun growing very dim, I could hardly hear my motor run, and I felt very hungry. The trend of my thought was that it must be getting late,

that evening must be coming on, but I was still climbing, so thought I might as well stick to it a little longer, for I knew I could reach my ceiling pretty soon, then I should go down even though it was dark. I could land all right, for I had made night landings many times before; and so I went to talking to myself, and this I thought was a good sign to begin taking oxygen, and I did.

"I was then over 25,000 ft., and as soon as I started to inhale the oxygen, the sun grew bright again, my motor began to exhaust so loud that it seemed something must be wrong with it, I was no longer hungry, and the day seemed to be a most beautiful one. I felt like singing with sheer joy as I gazed about through the small portion of my goggles which had no frost, due to a drop of oil which had splashed on them from the motor.

"It was wonderful to see the very clear blue sky with the clouds thousands of feet below. The frost on my goggles bothered me very much. At times I had to remove my glove in order to put the warm palm of my hand on the glass to thaw the frost. I did this about every ten minutes, so that I could take the proper readings of the instruments, which I marked down on my data pad. I believe that if my goggles had been better ventilated, they would not have frosted. When I was about 27,000 ft., I had to remove my goggles, as I was unable to keep a steady climb. My hands, by this



time, were numb and worried me considerably. The cold raw air made my eyes water, and I was compelled to fly with my head well down inside the cockpit.

"I kept at it until my oxygen gave out, and at that point I noticed my aneroid indicated very nearly 29,000 ft. The thermometer showed 32 degrees below zero, Centigrade, and the revolutions per minute had dropped from 1,600 to 1,560. This is considered very good. But the lack of oxygen was affecting me, I was beginning to get cross, and I could not understand why I was only 29,000 ft., after climbing for so long a time. I remember that the horizon seemed to be very much out of place, but I felt that I was flying correctly and that I was right and the horizon was wrong.

"About this time the motor quit. I was out of gasoline, so I descended in a large spiral. When I descended to about 20,000 ft., I began to feel much better and I realised that the

lack of oxygen had affected me. I passed down through the clouds at 16,000 ft., and, as I remember, it was snowing from these clouds upon the next layer, some 4,000 ft. below. I am not positive of this, as I may have been affected by the lack of oxygen. I noticed as I descended that the air seemed to be very thick and stuffy, but very nice and warm. I did not see the ground from the time I went up through the clouds above Dayton, Ohio, until I came down through them again at 4,000 ft. above Canton, Ohio, over 200 miles from where I started.

"I was 1st, beyond a doubt, with a dead engine over very rough country. I landed O.K. and broke the tip of my propeller, which was standing vertical, when I rolled into a depression in the ground. However, I did not nose over or do any other damage to the plane myself. I flew back to Dayton with a new propeller."

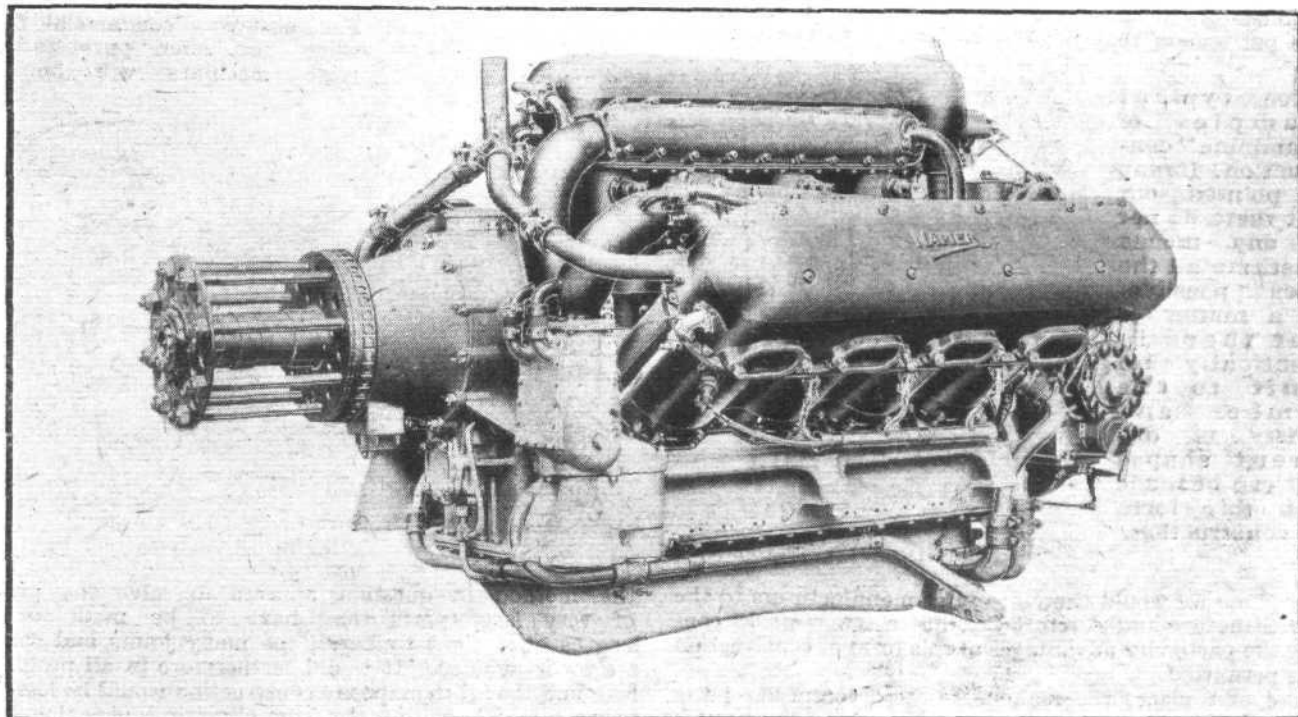
## THE 450 H.P. NAPIER "LION" ENGINE

It is now possible to give a few particulars of the special engine for aero work produced by Messrs. D. Napier and Son, Ltd. The general arrangement of the "Lion" engine can be gathered from the photograph; the twelve cylinders,  $5\frac{1}{2}$  in. bore, are arranged in three banks so that three pistons are connected to each crankpin of the four-throw crankshaft, the centre pistons having a master connecting rod with links for the side ones. The crankshaft is carried in roller bearings. Made from steel forgings the cylinders are fitted with steel jackets, while the head is of aluminium and carries

to prevent them freezing at high altitudes. During a test of one of these engines a temperature as low as 35 deg. Cent. was recorded.

Lubrication has also been the subject of special study; it is entirely automatic and designed with a view to preventing over-lubrication when the machine is dived or climbed steeply for a long time.

All moving parts of the engine are enclosed, and the usual accessories are fitted, provision being made for starting, speedometer drive, &c.



The general arrangement of the 450 h.p. Napier "Lion" engine.

the camshafts which act directly on the valve heads. There are two inlet and two exhaust valves to each cylinder.

Arranged low down at one end of the engine, the carburettors are fitted with separate intake pipes with a view to eliminating any possibility of the machine catching fire owing to engine trouble. If there should be a back-fire in one cylinder the other two blocks will keep the engine running and suck in the flames. Special attention has been given to the heating of the carburettors, and the water jackets are carried down and round the throttle barrels themselves

A reduction-gear is fitted with the drive for the air-screw above the crankshaft.

In one respect the photograph does not do justice to the engine, and that is in giving an idea of its small size in comparison with the power developed. It is also light, the weight, we understand, working out to 1.85 lbs. per b.h.p. at normal power. In spite of this the engine maintains the Napier reputation for reliability, and a machine fitted with one of these engines has achieved records. Although they are not available at the present the petrol and oil consumption figures are said to be very good.

### A Charge of Perjury

ROBERT TAYLOR, an aeronautical engineer and company promoter, of Old Broad Street, surrendered to his recognisances at the Guildhall on November 14th, to further answer charges of having committed wilful and corrupt perjury in affidavits sworn in the High Court in an action brought by a Greek shipping agent to recover £5,000 advanced by him to the defendant for the purpose of paying Inland Revenue fees in connection with a proposed increase of capital of a company called the Associated Aircrafts (Limited).

Mr. Cecil Whiteley, prosecuting, asked the Alderman to commit the defendant for trial, not only on the charge of perjury but also on a charge of the fraudulent conversion of the £5,000, or such part of it as he was supposed to have paid for Inland Revenue fees. He should call evidence to show that the defendant had spent the money on other things.

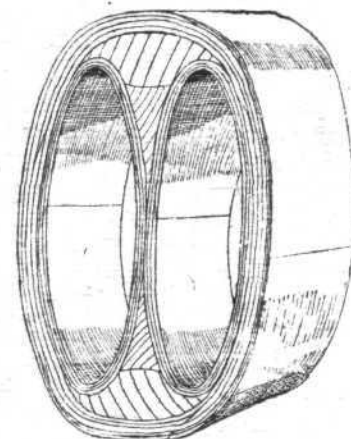
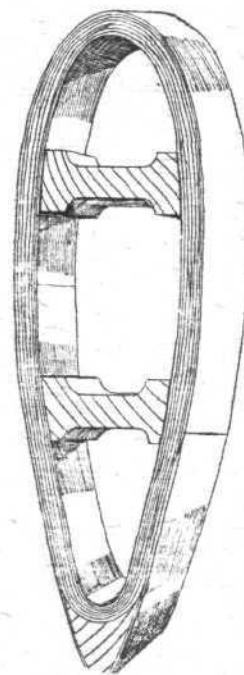
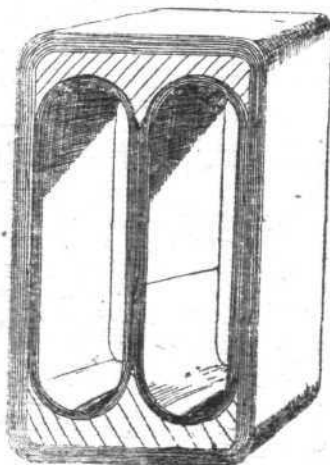
Mr. A. Bryan, for the defendant, said his client would plead not guilty and reserve his defence, and he was committed for trial.

## COMPOSITE WOOD CONSTRUCTION

THE difficulties of obtaining adequate supplies of Silver Spruce are, unfortunately, too well realised by manufacturers to need any elaboration here. To find a substitute is no easy matter, although there has been no lack of attempts at doing so. The simplest way out of the difficulty would undoubtedly have been found if another timber, possessing the qualities of silver spruce and more easily obtainable, was to be had. This has not been the case up to the present, however, the timbers that are easily obtainable being unsuited for aeroplane construction, while others that might possess the necessary qualifications are as difficult to obtain as is the silver spruce. In referring to the difficulties of finding a substitute for silver spruce we have in mind the ordinary process of manufacture where the part is made out of solid planking by spindling or otherwise cutting it to the shape desired.

The idea at once suggests itself that it might be possible by suitably building up the particular part to provide for the necessary strength without sacrificing light weight, and at the same time to use for such construction such woods as may be procured with reasonable facility. This is actually what has been the aim of the Hollow Structure and Aircraft Co., Ltd., of 4, Old Burlington Street, W.1, who have for a considerable period been experimenting with composite wood construction. Fundamentally the construction consists in building up the aeroplane part required to the desired shape (outside) by a system of multi-ply layers of different kinds of wood, glued together. As to the actual details of the methods of this firm it would obviously be undesirable to give particulars that might be of value to the enemy,

Three typical examples of "Laminine" construction. It may be pointed out that these do not by any means constitute all the types possible. As a matter of fact there is practically no limit to the number and variety of different shapes that can be made with this form of construction.



but also, and quite as much, when looking to the future. It is quite evident that if the world goes on using up silver spruce at the rate this is now being done, the time will come, and not so very distant either, when the supply will give out.

Then again, the composite construction offers almost limitless possibilities of improvement; by the choice and combination of the different kinds of wood so as to give the best possible results under the particular local stresses to which the part may be subject; by the various placing of the grains of the different layers, by the actual shape of the internal components, &c. We have shown in our illustration three typical examples, but there is practically no limit to the variations possible, even for a given shape of outline. A further point on which this construction would appear to possess advantages is in the matter of splintering. If a part is struck by a projectile and pierced, the crossing of the grain would prevent the whole part from snapping off short, and it would, unless the part were actually cut right through, probably still hang together and might enable the aviator to reach home safely by careful flying.

We could really go on enumerating possibilities of this interesting method of construction, but this is a subject on

which it is at present extremely difficult to say enough without saying too much. We will, therefore, confine ourselves to pointing out one more instance where the composite construction might be found superior. For post-War commercial flying, when for some purposes very large machines will be used,

and for these we would therefore refer manufacturers to the Hollow Structure and Aircraft Co., but a few remarks concerning the particular advantages of this form of construction may be permitted.

In the first place, the makers of these composite parts have found from experiments, covering a considerable period, that the requisite strength can be provided by their method, by using English grown timbers. This in itself would appear to be sufficient justification for introducing this method of construction in aeroplanes for war purposes, as it would provide a very good solution of the silver spruce problem. There are, however, a number of other respects in which this construction appears to possess advantages over other methods. For instance, it is an undoubted fact that where, to take an example, an aeroplane spar is spindled out to an I section from a solid rectangular beam, as much as 50 per cent. of the wood is cut to waste. Bearing in mind the difficulty of obtaining the timber this is obviously a thing to be avoided, and we learn from the Hollow Structure and Aircraft Co. that with their method not only can English timber be used, but the amount of waste has been actually reduced to about 2½ per cent, while it has been found possible to use only such woods as are not now required for aircraft purposes. The importance of this can scarcely be exaggerated.

This is not only in view of present abnormal conditions,

the method in question appears to solve the problem of very large parts that have to be made of long lengths of straight timber, if too many joints and splicings are to be avoided. It would furthermore in all probability be found that the composite construction would be less likely to warp or otherwise suffer from climatic causes than would the solid construction at present in use. The Hollow Structure and Aircraft Co., Ltd., will welcome inquiries, and are anxious to have an opportunity of making parts on their principle to be tested in machines against the same part constructed in the ordinary way. Naturally, we cannot publish all the facts which we have available regarding the composite construction, but we should most strongly advise manufacturers to make enquiries direct to the firm and find out for themselves all the present and potential merits which in our opinion this form of construction possesses.

The name under which the patent is registered (Nos. 6043 and 6434) is "Laminine" and the company is prepared to issue licences on a royalty basis to any manufacturer who wishes to do the work himself. In that case the company would be willing to send experienced men to instruct his workpeople in the details of the construction. The process of making, although having the appearance of being highly technical, is in reality easily understood and rapidly learnt by intelligent artisans.

### Release of Second-hand Tools.

THE Minister of Munitions announces that in future second-hand machine tools, second-hand wood-working machinery, and second-hand treadle lathes may be bought and sold without the sanction of the Ministry and without

restriction as regards price. This suspension of regulations however, does not in any way affect the position with regard to new tools, to which the regulations still apply in their entirety. A further notification concerning new tools will be issued in the course of the next few days.



## AIRISMS FROM THE FOUR WINDS

**THE Air Empty.** "Peace is very palpable to-day, even at the front. What I noticed even more than the absence of artillery fire and one's own delightful freedom from the burden of a tin hat and mask was the vanishing of the aeroplanes. It was a day of perfect visibility and not a plane was up. One felt that something was wrong." Thus wrote Mr. W. Beach Thomas in his despatch from the Western British front the morning after the signing of the Armistice. It is a suggestive ending to the War.

WHAT'S amiss with the suggestion which has been made that, by way of filling the want of a Bank Holiday between August and Christmas, November 11th shall be proclaimed an Empire holiday in commemoration of the downfall of Hun militarism?

MAJOR GORDON WATNEY, speaking near Weybridge the other day, gave his opinion of putrid politics thus: "The politician is no good to anybody—he is out for himself and to get an extra feather in his cap." And he should know a lot about his subject.

MIXED up very intimately with putrid politics is Bureaucracy, of which Viscount Middleton, speaking last week at a meeting of the Surrey Nursing Association, said: "Having overthrown the greatest of bureaucracies, we need to take care lest we establish a bureaucracy for ourselves." Unfortunately it's already with us. What we have now to see is that it is not perpetuated. And it'll take some doing.

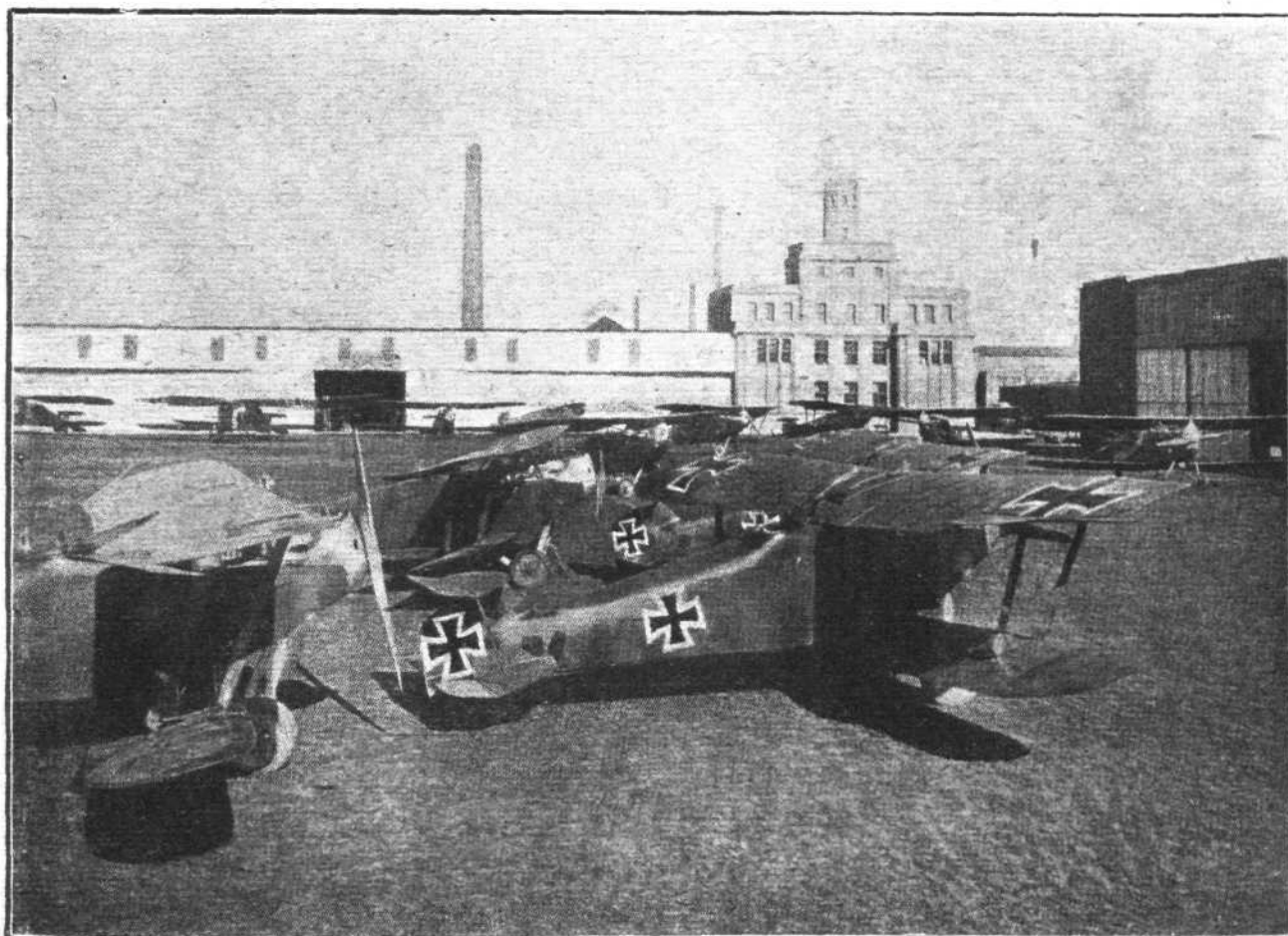
ANOTHER "first" for the R.A.F. Writing from Mudros Bay on November 5th, Mr. G. Ward Price records the fact that a first landing had been made on the Gallipoli Peninsula by half a dozen British airmen, who flew over there and came down at Galata, near Gallipoli, where was the chief German

aerodrome, with whose machines our own from Lemnos and Imbros were constantly fighting. The Turkish troops on the peninsula did not seem to have been officially informed of the Armistice, and the attitude of their officers was consequently a little constrained. The British machines crossed the peninsula from about Y Beach at Helles to Galata, flying only about 400 ft. above the ground, so that possible hostile consequences of the Turkish failure as yet to circulate news of the closure of operations were averted by the white streamers which the aeroplanes flew. They stayed an hour at the enemy aerodrome, and found there some of their own machines which had been shot down some months ago.

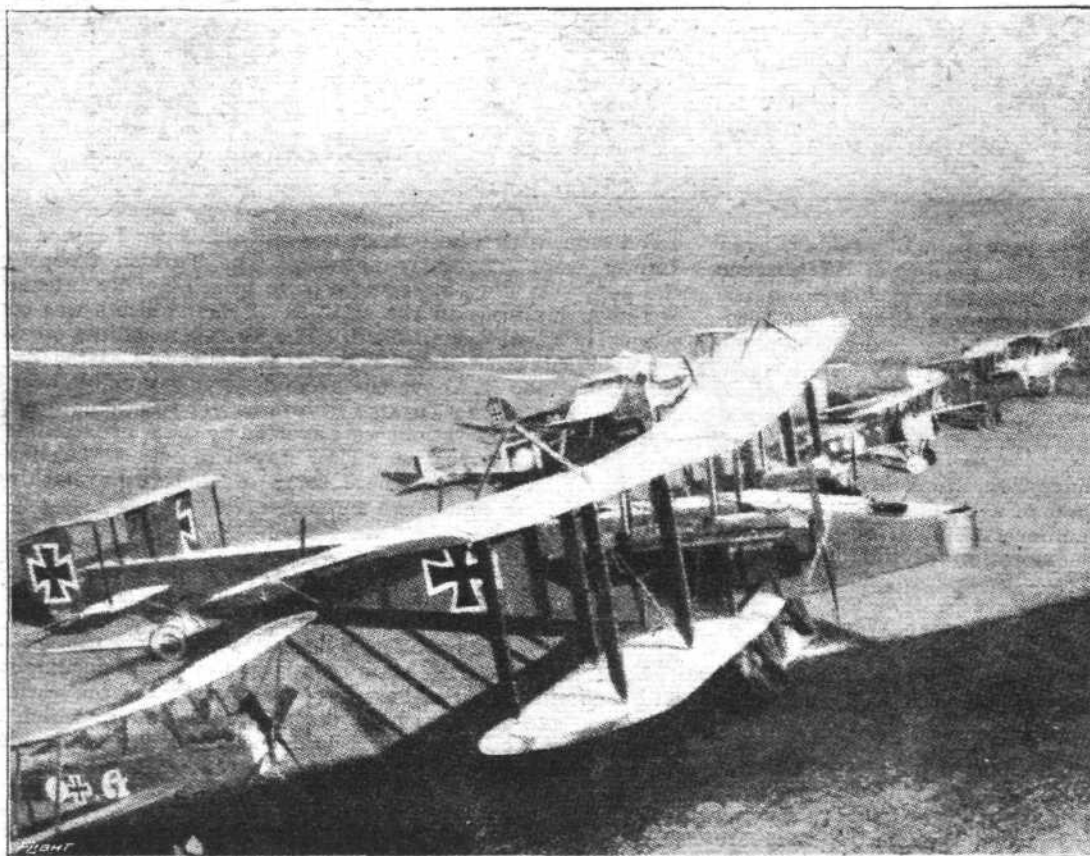
In reply to a query by Mr. Dillon in the House last week, as to the delay in the enquiry into the Dope monopoly job, and as to whether the proceedings would be conducted in public, Mr. Bonar Law seemed quite surprised at a suggestion of delay. "It has been found necessary," said the Chancellor of the Exchequer, "to examine a large number of documents, and preliminary statements have been received from various persons, some of whom have been granted time in which to prepare their statements and evidence. It has been decided for the present to take evidence in private." One wonders why?

WE notice that in a report from the British Army in France, Marshal Foch is credited with having "paid a flying visit to General Sir William Birdwood." That's a term which under present-day conditions will have to be modified. To motor to an appointment is *not* to pay a "flying" visit *now*.

Now that the Trans-Atlantic traffic begins to look thick—on paper, anyhow—someone suggests that it would be very interesting to see among the first contestants the realisation of the wonderful aerial super-liner designed for Messrs.



THE HOME OF THE "HANNOVERANERS."—A batch of Hannover biplanes in the grounds in front of the HAWA. (Hannoverian coach works) offices. The building on the left is part of the erecting shop.



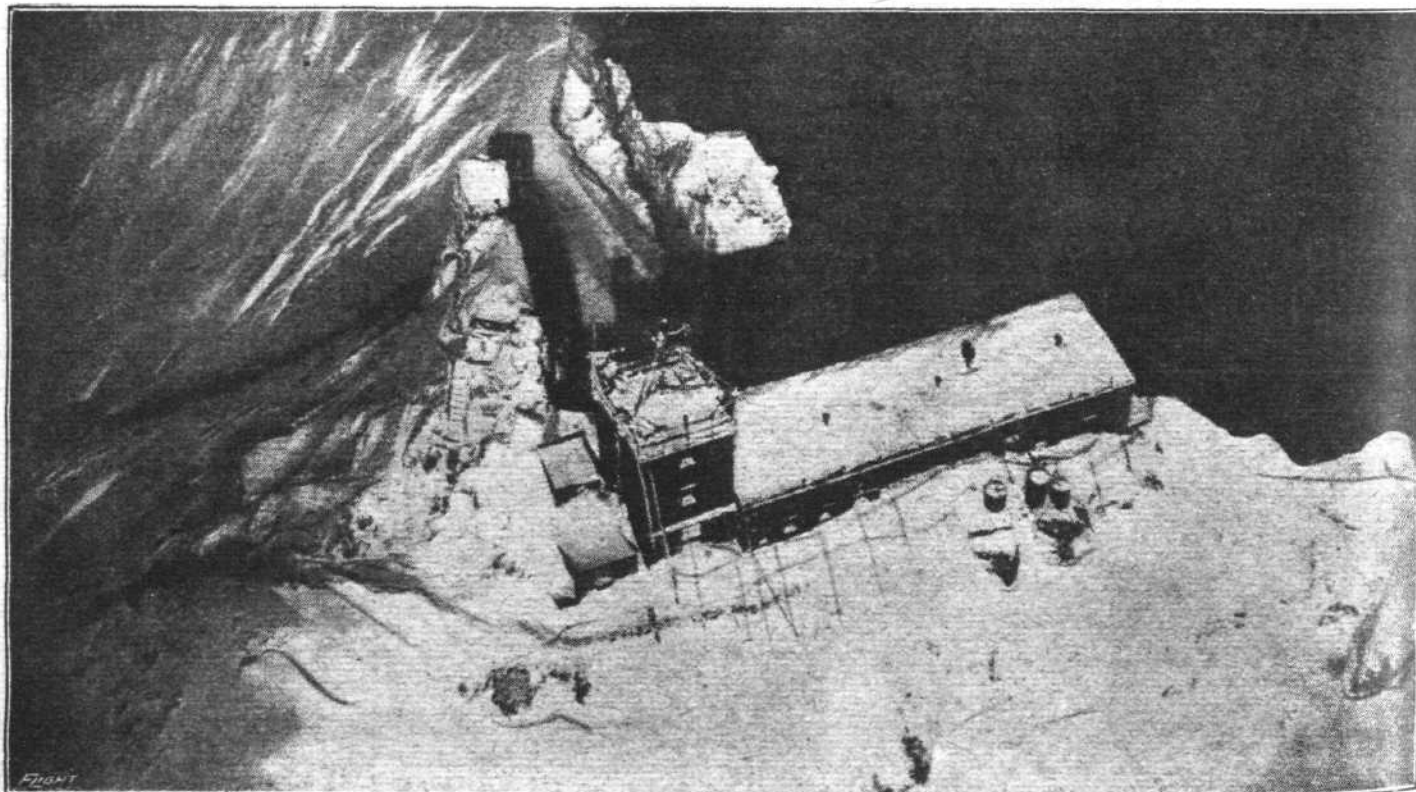
**"Prisoners of War."**—A batch of Allied aeroplanes captured by the Germans. In the foreground is a Handley-Page bomber.

C. C. Wakefield and Co., and used by them recently as an advertisement, and also the one created by the Grahame-White Co. A race between these two would surely prove sensational! Perhaps their respective ideas may not be so far from actual developments as we may at present think, and in the case of the Wakefield Trans-Atlantic Ship it is a remarkable fact that something bearing a strong resemblance in its general outline is already in existence, although built in great secrecy, and, needless to add, not in any way responsible for their design, which was purely fanciful.

IN Germany, with the mark at about 6d., Iron Crosses at a halfpenny apiece, aeroplanes at £5, and Zeppelins offered at £12 and no bidders, war trophies and the economic situation appear to be in for a little bit of a slump.

If true, wonder what on earth prompted Dutch aviators to offer last week a banquet of honour to Mr. William Hohenzollern, the Skipper (over the Dutch frontier).

Good old Jules Verne (whom you used to pore over behind the lid of your desk, or carefully camouflaged beneath the Algebra) produced a "new shudder" when he evolved the "Voyage to the Moon," but an officer of the United States Air Service, Capt. R. W. Schroeder (assisted by an oxygen tank), runs him close. The gallant pilot managed to ascend five and a half miles from the earth's surface, and returned intact. At the inconsiderable altitude of five miles he began to feel sleepy, and the sun above him grew dim. He could hardly hear his motor running, and he felt hungry. In a dreamy way, it occurred to him that it must be getting



**IN AN AEROPLANE OVER THE BAVARIAN ALPS.**—The Munich hostel on the summit (2,963 metres.)



towards evening, and he had better return to earth. But he still pointed her nose up, and switched on the oxygen. Instantly, he says, the sun grew brighter again, and the motor began to exhaust so loudly that he thought there must be something wrong with it. His hunger departed, and the evening shadows cleared away. Still he stuck it, but at last the oxygen gave out, and he could not see through his goggles for the frost that formed on them. But he had climbed to 28,900 feet.

## TEN YEARS AGO

Excerpts from "FLIGHT" of November, 1908

### HENRY FARMAN AT THE FRONT AGAIN

Since Henry Farman's trip to America, he has been little heard of in practical aeroplane work, although he has been installed at Chalons for some little time. He has now placed somewhat in the shade the wonderful performances of Mr. Wilbur Wright, by making his very plucky across country record flight on the 30th ult., from near the military camp at Chalons to Rheims, a distance of 27 kiloms., in the time of 20 mins., rising to a height of over 100 ft. He also entered for the High Flight Prize, and secured this on the 31st ult.,

by flying on the Chalons camp ground at a height of fully 100 ft. past pre-arranged points marked out by balloonettes.

### M. BLERIOT ALSO MAKES HISTORY

On the day following M. Bleriot made what may be regarded as an equally successful essay and record with his monoplane. In the afternoon, at 2.50, M. Bleriot was ready to fly, directing his course to Artenay (Loiret), a village situated at a distance of about 14 kiloms. from his hangar. Having overhauled his machine he re-started for Toury, where he arrived at 5 p.m., having *en route* during the return journey made a stop at Sintilly. In his flight from Toury to Artenay, M. Bleriot's time was 11 mins. for the 14 kiloms.

### CLEMENT-BAYARD AIRSHIP

On October 29th the "Clement-Bayard," the latest French dirigible which has been constructed for M. Albert Clement, was given its first trial, and a very successful one. The airship was manoeuvred over Sartrouville, St. Germain and Maisons Laffitte for about an hour and a half, and it behaved so splendidly that immediately on its descent it was resolved to have another trial. On Sunday last the airship accomplished a splendid performance by making a trip to Compiègne and back, the round trip being about 250 kiloms., and occupying about five hours.

## COLONEL MOORE-BRABAZON AS PARLIAMENTARY CANDIDATE

It is an interesting sign of the times when no less famous a pioneer of aviation than Col. J. T. C. Moore-Brabazon, R.A.F., is adopted as Parliamentary candidate, and one hopes this example will be followed by other men of experience and influence in the aircraft world, for undoubtedly there will be countless questions of the highest importance raised in the House of Commons in the near future which will be the better handled if we have as representatives men who understand the subject thoroughly.

Col. Moore-Brabazon was adopted at a public meeting held at Rochester recently, and had a most enthusiastic reception. He said, in the course of his address, that he came before them as a Unionist candidate to support the existing Coalition Government, and in supporting that Government he supported Mr. Lloyd George, Mr. Bonar Law, and Mr. Barnes.

After dealing with the general position of the political outlook he went on to say he could not let that opportunity go without speaking of the Air Force, and in that connection it was with the greatest possible pleasure that he saw on his left that evening Mr. Oswald Short, with whom he had worked—it was only ten years ago, but it seemed a long time in the history of aviation. In those early days they were looked upon as crazy lunatics, like people looking for perpetual motion, and were laughed at by most people. But since then they had seen that when England really put her back into it and got to technical subjects in earnest there was no country in the world that could touch them.

"I have been connected intimately with aviation from the start," said the speaker, "and from the beginning of this war, in the Royal Air Force, and I say emphatically that at no time from the beginning has Germany or any other country been superior to us in any technical details. Now that's a very big claim, because we are always pretending what fools we are, but I happen to know."

The Air Force had started in England some very big industries from mushroom growth, and he asked them to give him support, if he were returned, to see that the Government in some way or other carried over that difficult time before aeroplanes became that commercial necessity which they were

going to be. They must see that those very big firms with all their employees were given Government orders for a year or two until the thing was on a self-supporting basis.

Mr. Oswald Short, in seconding a vote of confidence in Col. Brabazon as a fit and proper person to represent Rochester in Parliament, said that when he heard that his old friend was standing for that borough, the question he put to himself was whether his political views were such that he (Mr. Short) could support. A reference to his career and his avowed aims brought an answer entirely in the affirmative. Col. Brabazon was in sympathy in efforts as between thinkers and workers, capital and labour; he wanted to shorten the road to those ideal conditions of life at which they all aimed. Col. Brabazon satisfied him that they were his aims by his support of Mr. Lloyd George. The matter was of great interest to him as a partner in his firm, and was also the interest of the 3,000 employees and dependents in their works at Rochester and Bedford.

Referring to Col. Brabazon as "the pioneer of pioneers" in the matter of aviation, Mr. Short called to mind assisting him in one of his first attempts. It was a machine called "The Bird of Passage." He was one of those who hung on to the tail, and presently he found himself bounding over the ground at 20 miles an hour. However, he was soon shaken off, and the machine, rising to a height of about 100 ft. and flying a few hundred yards, crashed to the ground. They all rushed to the spot, fully expecting to see Col. Brabazon dead, but to their great joy he was collecting himself together out of the wreckage. But his first question was "Short, how long will it take you to build me a new machine?" That, said Mr. Short, was the spirit which dominated aviation from the very earliest and hardest times, and it was that spirit which had given us the lead, especially over our enemies, in aviation. With their help they would never let that spirit go.

The resolution was carried unanimously. All his numerous friends will wish Col. Moore-Brabazon success in this new venture, certain that he would render valuable service in Parliament to the science with which he has been so long connected.

## REVIEWS

### "PETROL AND PETROLEUM SPIRITS"

As Sir John Cadman points out in a brief introduction to this book, there is a general lack of information as to what "Petrol" really is, and what precise qualities should be utilised for the varying purposes to which it is to be applied. The little volume which Capt. Wilfred E. Guttentag, R.A.F., has written will, at any rate, be welcomed by all who have to do with the design of aeronautical and automobile engines, to whom it is a somewhat wearisome task to search out any information they may require from general treatises on the technology of petroleum. In a chapter on "Petroleum" Capt. Guttentag deals with its characteristics, the theories as to its origin, its geology, its exploitation and the methods of refining the crude oil. He then goes on to discuss the systems in use for rectifying and refining petrol, as well as the other sources of petrol, such as natural gas, cracked spirit and shale naphtha. The greater part of the book is taken

up with the chapter on "Examination and Testing," in which such questions as chemical composition, specific gravity, volatility, fractional distillation, calorific value, sulphur content, unsaturated hydrocarbons, aromatic hydrocarbons, acidity, purity, flash point, explosibility, specific heat, optical properties, solubility in alcohol, congealing point, &c., are considered in detail.

The book is illustrated by 26 drawings, and there are a large number of useful tables, while the usefulness of the work is considerably added to by the comprehensive index. "Petrol and Petroleum Spirits" is published by Mr. Edward Arnold, at 10s. 6d. net.

### PUBLICATION RECEIVED

*Petrol and Petroleum Spirits.* By Capt. Wilfred E. Guttentag, R.A.F. London: Edwin Arnold. Price 10s. 6d. net.

# PERSONALS

## Casualties

Lieut. PHILIP EDWARD BUCKINGHAM, M.C., R.A.F., who was reported killed on November 8th, was the eldest son of Mr. and Mrs. E. Buckingham, of "The Limes," Newbury, and was born on November 14th, 1896. He was educated at Newbury Grammar School and Churchers College, Petersfield. He played in the first XI. for "Churchers" both in cricket and football, and represented his college at Hampshire County sports. He was also a lover of horses and a keen motor cyclist. After an operation, he received his commission in May, 1915, and trained with the 10th Bedford Regiment and the 12th Royal West Kent Regiment. On going to France in June, 1916, he was attached to the 37th T.M. Battery, and was awarded the M.C. on November 1st, 1917. Last June he returned to England to join the R.A.F., and obtained his "wing" in October, joining the 7th Squadron early in that month.

Lieut. DUNCAN ELLIOT, Border Regiment and R.A.F., who was reported missing on April 15th, and is now assumed killed on that date, aged 24, was the eldest son of Mrs. Douglas Howard GILL, Heene Lodge, Carew Road, Eastbourne.

Lieut. JAMES GARVEY MARSHALL FARRALL, R.A.F., late R.N.A.S., who was reported missing on July 18th, and now presumed killed in action at sea on that date, was the only son of Mrs. Farrall and the late James J. Farrall, C.E., M.R.I.A., Westmoreland Street, and Sandycove, Kingstown, co. Dublin.

2nd Lieut. REGINALD WILLIAM LANE, R.A.F., who was killed in action on November 9th, aged 20, was the elder son of Harry and Margaret M. Lane, of Chilton House, Streatham Common South, S.W.

Lieut. JOHN EVERARD CHURCHILL MACVICKER, R.A.F., reported missing on July 22nd, now believed to have been killed on or about that date, was the eldest surviving son of Dr. and Mrs. Macvicker, of Street, Somerset, and grandson of the Rev. E. B. C. Churchill, sometime vicar of All Saints, Portsea. Born at Isleham, Cambs., in 1897, he was educated at St. Winifred's, Kenley, Surrey, and Aldenham School (Paulls). A fine athlete, he was captain of football at his preparatory school, and during his first term at Aldenham played for his House, and later was in the first football and cricket teams. Leaving Aldenham early, he came to London to fill the place of one called up for the war, but very soon he joined the London University O.T.C., and from there exchanged to a Cadet Corps of the R.F.C. in October, 1916. He obtained his commission in February, 1917, and his "wings" in the following May. He was a scout pilot and had been doing night flying on home defence till he went overseas in May, 1918. He was killed during an attack on a patrol of German aeroplanes who were in superior numbers.

Lieut. PHILIP NEWBOLD RHINELANDER, of the 20th Aero Squadron, First Army American Exped. Forces, who was killed in action on September 26th, aged 24, was the son of Thomas Newbold and Katherine Blake Rhineland.

Lieut. STUART HARVEY SCOTT, R.A.F., reported missing on September 29th, and now reported killed, was the son of Mr. and Mrs. Donald J. Scott, of Mayfield Road, Sanderstead. He was educated at Whitgift Grammar School, Croydon, where he gained his colours as a member of the football XV. and shooting VIII. At the age of 16 he entered the R.F.C., and, having obtained his "wings" in March of the present year, he went to France at the end of that month to join the 6th Squadron, with which he served as a pilot until he was killed, within a fortnight of his 18th birthday.

2nd Lieut. ARTHUR NUGENT WEBSTER, R.A.F., who was reported missing and now known to have been killed in aerial battle on June 5th, aged 19, was the younger son of Mr. and Mrs. A. Webster, Thicket Road, Anerley, S.E.

Cadet GEOFFREY WILLIAM AUDEN, R.A.F., who died on November 4th, in Hampstead Military Hospital, of pneumonia, aged 18, was the younger son of the Rev. Alfred and Mrs. Auden, Church Broughton Vicarage, Derby.

Lieut. MICHAEL DE BATHE, R.A.F., who was killed on November 11th, in a flying accident at the Flying School at Sleaford, was the only son of the late Mr. Percy de Bathe

and Mrs. de Bathe, of 85, Eccleston Square, and grandson of the late General Sir Henry de Bathe, Bart., K.C.B. Lieut. de Bathe, who was in Australia when war broke out, joined the Anzacs and served with them as a regimental officer throughout the whole Gallipoli campaign. He was given his command by General Sir William Birdwood, and served as a Staff officer with General H. R. Davis, Commanding the 11th Division. Returning to England, he passed for the R.A.F., with which he was acting as instructor at the time of his death. He had already had a serious accident this year while flying.

Lieut. ARTHUR DOUGLAS CAVE, Durham Light Infantry, att'd. R.A.F., who died on November 10th at the Chatham Military Hospital, from pneumonia following influenza, was the eldest son of Mr. and Mrs. S. Cave, 16, College Terrace, Brighton, and of Colombo, Ceylon.

Flight Lieut. ALFRED RICHARD CREESE, R.A.F., who died on November 13th, at Cliff Military Hospital, Felixstowe, of pneumonia, aged 20, was the younger son of the late Franklin W. Creese and Mrs. Creese, of 41, Langdale Gardens, Hove.

Lieut. BRIAN WALLIE EDWARDS, of St. Paul's School R.A.F. (formerly Lieut., Royal Dublin Fus., and of Observation Section, R.E.), who died on November 10th, of pneumonia following influenza, aged 23, was the younger son of Richard and Lucy Edwards, 62, Abinger Road, Bedford Park, W.4.

Lieut. LIONEL BERTIE ELD LLOYD, Canadian Cavalry, attached R.A.F., who died on October 12th of pneumonia, was the son of Mr. and Mrs. B. S. Lloyd, of Leighford Ranch, Midnapore, Alberta.

Capt. HENRY MAITLAND MAITLAND, Intelligence Corps, who died at Cherbourg of pneumonia following influenza on November 10th, was the younger son of the late Arthur Maitland, M.A., J.P., barrister-at-law, of Shudy Camps Park, Cambridgeshire, and only brother of Brig.-Gen. E. M. Maitland, D.S.O., R.A.F. He was educated at Marlborough and Selwyn College, Cambridge. In 1910 he took up flying, and was one of the first pupils to learn to fly at Salisbury Plain, with the Bristol Aeroplane Company, under M. Jullerot. His flying career came to a premature close owing to a severe accident with his Bristol biplane, in which he broke both his legs and suffered other minor injuries. Being in South America at the outbreak of war, he immediately returned to this country and joined the Motor Cyclist Corps, going out to France as a 2nd lieut. at the end of 1914. Subsequently he transferred to the Intelligence Corps, and served with distinction for the last 3½ years as an intelligence officer employed on special duties both at Dunkirk and elsewhere. For these services he was twice mentioned in despatches, and promoted captain last August. Captain Maitland was a regular contributor to the *Bystander*, his articles appearing under the heading of "Jack Johnson." He was also the author of "Lighter-than-Air" and other humorous stories.

Lieut. IAN RUDOLF MEES, R.A.F., who was killed on November 14th, as the result of an aeroplane accident, aged 20, was the only son of Mrs. Mees, of 30, Pembroke Square, W., and the late A. R. Mees, of Glasgow.

## Married

Captain HUBERT WILLIAM KINGDON, 8th Hants and R.A.F., was married on November 12th, at Keston Parish Church, to ANNIE ISABELLE GRETCHEN, widow of Captain Lunt, 5th Royal Warwickshire Regt.

Lieut. REGINALD MANBY, R.A.F., only son of Mr. and Mrs. Manby, of Oaken, Staffs, was married on November 11th, at St. Mary Abbott's, Kensington, to MARJORIE, younger daughter of Lieut.-Col. W. W. LEAN, late Bengal Cavalry, of 9, Stanford Road, W.8.

## To be Married

The engagement is announced between Lieut. E. L. CAPRÉOL, R.A.F., third son of Mr. F. C. Capréol, of Ottawa, Canada, and KATHLEEN, only daughter of the late E. W. SENIOR, M.R.C.S., L.R.C.P., of Herne Bay, and Mrs. Senior of 63, Clarence Road, Teddington.

The engagement is announced between Capt. W. W. LEETE, A.F.C., only son of Mr. and Mrs. W. G. Leete, of Birkenhead,



and MARIAN ELSIE, youngest daughter of Mr. and Mrs. ALEXANDER GUTHRIE, of Heswall, Cheshire.

The engagement is announced between Col. ROBERT HENRY MORE, C.M.G., R.A.F., second son of the late R. Jasper More, M.P., of Linley, Shropshire, and Mrs. More, of Rhadley, Shrewsbury, and PHYLLIS BLANCHE, younger daughter of the Hon. FRANK and Mrs. PARKER, of Wilton House, Eaton Square, S.W.

The engagement is announced between Capt. DENNIS GEORGE MURRAY, R.A.F., eldest son of Lady Mary and Prof. Gilbert Murray, of Oxford, and PHYLLIS EVELYN KELLER, eldest daughter of Mr. and Mrs. L. E. Keller, of New Mount, Windsor Terrace, Hampstead.

An engagement is announced between Lieut. P. J. O'DONNELL, Canadians, R.A.F., eldest son of Mr. Joseph O'Donnell, Quebec, Canada, to MARY EDNA, third daughter of Mr. and Mrs. J. FARMER, Great Hales Street, Market Drayton.

A marriage is arranged, and will take place very shortly at Saltwood, between Lieut. H. F. RICHARDSON, Eastern Ontario Regt., attached R.A.F., eldest son of the late Right Hon. H. W. Richardson, of Kingston, Ontario, and MARJORIE CONSTANCE, daughter of Mrs. DEEDES and the late Col. H. G. Deedes, of Saltwood Castle, Hythe, Kent.

The engagement is announced between Lieut. GEORGE NUGENT WADE, the Worcestershire Regt., attached R.A.F., second son of Mr. and Mrs. H. S. Wade, of Beckbury House,

Shrewsbury, and MARIAN ALICE PAYNE, Assistant Administrator, Women's Royal Air Force, only daughter of Dr. F. Cobham Payne, of High House, Witham, Essex.

The engagement is announced of Capt. F. M. I. WATTS, the Worcester Regiment, attached R.A.F., third son of Mr. and Mrs. Francis Watts, Newton Abbot, South Devon, and PATRICIA, elder daughter of Mr. and Mrs. George Murray PRESTON, Wimbledon.

The engagement is announced between Lieut. JOHN W. WINTER, R.A.F., only son of Mr. and Mrs. H. Gordon Winter, of Wrampingham, Norfolk, and PHYLLIS GRACE GARDNER, only daughter of the late Rev. W. R. GARDNER, rector of Huntingdon, and Mrs. Gardner, of Hemingford, St. Ives, Hunts.

#### Items

The will of Capt. NORMAN PRESTON MORRIS, R.A.F., of Breeze Point, Reigate, and of Messrs. Arthur Morris and Co., hop merchants, Southwark Street, S.E., who was killed while flying, has been proved at £31,247.

The will of Capt. SAMUEL TRAHERNE SAUNDERSON, R.A.F., of Harriestown, Brannockstown, Kildare, killed while flying, son of the late Mr. Llewellyn and Lady Rachel Sanderson, and the adopted son of Mr. Percy and Lady Annette LaTouche, has been proved at £11,707.

Lieut. F. J. ORTWEILER, R.A.F., arrived in England on October 31st, after escaping from Stralsund Camp, Germany.



## AVIATION IN PARLIAMENT.

### The Acetate of Cellulose Company Inquiry

Mr. DILLON, in the House of Commons on November 12th, asked the Chancellor of the Exchequer what is the cause of the delay in carrying out the inquiry into the affairs of the Acetate of Cellulose Company; what procedure has been settled by the Commission of Inquiry; and whether the proceedings will be conducted in public?

Mr. BONAR LAW: I am not aware that there has been any delay on the part of the British Cellulose Inquiry Committee in carrying out the inquiry. It has been found necessary to examine a large number of documents, and preliminary statements have been received from various persons, some of whom have been granted time in which to prepare their statements and evidence. It has been decided for the present to take evidence in private.

Mr. DILLON: Are counsel allowed to appear on behalf of the various interests, and why has it been decided to take evidence in private?

Mr. BONAR LAW: I cannot answer the first question. I have not made inquiry recently. But it was left to the tribunal itself to decide. As regards the second part, it was also left to the tribunal to have it in private or in public as it thought best. In any case the object was to have the report and that will be given.

Mr. DILLON: Was not the object stated in the House to be to enlighten the public and clear away misunderstandings, and how can you clear them away if the public do not see the evidence?

Mr. BONAR LAW: From the very first it was put to me in the House when the Committee was set up, and I said then I would leave it to the discretion of the tribunals whether discussions should be public or private.

### Air Raids (Insurance)

Mr. CURRIE asked the Chancellor of the Exchequer whether he has received representations as to its being no longer necessary to insure property against hostile aircraft action; if so, what reply he has made to them; and whether he can say when the Government insurance scheme will be brought to an end?

Mr. BONAR LAW: The answer to the first part of the question is in the negative. As regards the last part of the question, I would refer my hon. friend to the reply which I gave to my hon. friend the member for Great Yarmouth on Thursday last.

### Delayed Payment of Dependant's Allowance

Sir M. BARLOW, on November 13th, asked the Under-Secretary of State to the Air Ministry with regard to the case of Mrs. Tunner, of 88, Halliwell Street, off Trafford Road, Salford, whether he is aware that her son, William Tunner, No. 251938, A Squadron, Royal Air Force, No. 2 School of Navigation, Andover, Hants, joined up with the Royal Air Force on March 4th, 1918; that he allotted his mother 7s. and applied for the Government allowance and filled up the proper form, but, in spite of continued correspondence with the paymaster, no Government allowance has, after nine months, yet come through; and whether he can give directions to have the matter at once attended to?

The Under-Secretary of State to the Air Ministry (Maj. Baird): This case is being fully investigated, and I will inform my hon. friend of the result as soon as possible.

Sir M. Barlow: After nine months' delay, surely it is possible to give an answer?

### Lighting Restrictions

Mr. G. TERRELL asked the Under-Secretary of State for the Home Department whether he can see his way, in view of the termination of hostilities, to forthwith withdraw all restrictions as to lights, and particularly motor headlights?

Mr. BRACE: With regard to street lights, and lights in houses and shops, I would refer to the answer I gave yesterday to questions on the same subject. The relaxations which I announced apply not only to the Metropolitan police district but generally throughout the country, except that the naval authorities desire that the restrictions on lights visible from the sea should not be withdrawn at present on certain parts of the coast. The question of lights on vehicles is under consideration, and for the present the restrictions remain in force.

### Director-General of R.A.F. Medical Services

Maj. H. TERRELL asked the Under-Secretary of State to the Air Ministry whether Colonel Fell has been appointed director-general of medical services, Royal Air Force, and has he, on accepting such appointment, undertaken to adopt the principles recommended by the Watson Cheyne Committee or, if he has not yet been appointed, will Colonel Fell, or whoever else is appointed

be required to adopt such principles in the administration of the Royal Air Force medical service?

Maj. Baird: I am not yet in a position to add to the answer which I gave to my hon. and gallant friend on the 4th inst. An announcement will be made very shortly.

### R.A.F. Cadets Training and Pay

Mr. JOYNSON-HICKS, on November 14th, asked the Under-Secretary of State to the Air Ministry what arrangements are made for cadets between their stay at Hampstead in the reception battalion and their transfer to a school or between their school and squadron; and what allowance or pay is given them?

The Under-Secretary of State to the Air Ministry (Maj. Baird): Cadets ordinarily proceed direct from the distribution depot at Hampstead to the cadet brigade or school to which they are posted. If granted leave from the depot they are given on application an advance of pay at 1s. 6d. per diem, plus ration allowance at the rate of 2s. 1d. per diem.

Cadets passing from the school at Uxbridge to a training squadron are usually given a week's leave in respect of which an advance of seven days pay and ration allowance is made as well as a return railway warrant. Cadets from the Dominions are given an additional advance in view of the fact that most of them have no homes in England.

### Chevrons still being Considered

Mr. JOYNSON-HICKS asked the Under-Secretary to the Air Ministry whether he is aware that the present uncertainty with regard to the wearing of chevrons in the Air Service is causing disquiet to thousands of officers and men who are now entitled to wear them owing to their previous service at the front in the Army or the Navy; and whether he can give an assurance that the Air Council will publish their scheme allowing chevrons to be worn before the Dissolution of Parliament?

Maj. Baird: The Air Council are aware that feeling exists in the Royal Air Force on this subject. Remedial action is being taken, and an announcement will be made as early as possible.

### R.A.F. Medical Administration

Mr. JOYNSON-HICKS asked the Under-Secretary to the Air Ministry whether he is aware that at the last meeting of the Medical Administrative Committee they unanimously re-affirmed their view that the new medical administrator should be willing to accept the principles laid down in the Medical Advisory Committee's Report, on the ground that unless this step were taken all the work of such committee might be undone to the detriment of the Air Service; and whether the new administrator is prepared to accept such resolution?

Maj. Baird: The answer to the first part of the question is in the affirmative. The offer of appointment was made to Col. Fell on the recommendation of the Medical Administrative Committee which had not ascertained whether he concurred in the report of the Medical Advisory Committee. As, however, I stated in reply to a question by the hon. member for Gloucester on the 4th inst., one of the conditions of the offer made to Col. Fell is that he should be guided by the principles laid down by the Watson-Cheyne Committee subject to certain amendments as regards principles of administration.

### Strike at Inverkeithing Aerodrome

Mr. T. WILSON asked the Secretary to the Admiralty if he is aware that, owing to being paid from 23s. to 25s. per week less wage than is paid to men employed on similar work in the West of Scotland, the building trade employees at an aerodrome near Inverkeithing are on strike; and whether, with the object of ending the dispute, he will bring their wages up to the same rate as that paid at the aerodromes referred to?

Mr. PRETYMAN: Certain men employed by contractors at the aerodrome referred to are at present on strike, and demand to be paid similar rates and allowances to those paid by the Air Ministry contractors on an aerodrome in another district. It is not possible to concede the demand, as the rates now paid in the area in which the aerodrome referred to is situated, have recently been reviewed by the Committee on Production, who decided that the operatives had failed to establish a claim for an increase.

### Air Raid Insurance

Sir J. HARMOOD-BANNER, on November 15th, asked the Chancellor of the Exchequer whether any rebate of premiums paid for bombing and air raid insurance will be allowed, seeing that the risk has now ceased?

Sir A. STANLEY: My right hon. friend has asked me to answer the question. The question whether some refund of premium could be given has been carefully considered by the Aircraft Insurance Committee, and they have come to the conclusion that it is not practicable.

# THE ROYAL AIR FORCE

*London Gazette, November 12th.*

The following temporary appointments are made at the Air Ministry:—  
**Director.**—Lieut.-Col. C. C. Marindin, D.S.O., and to be actg. Brig.-Gen. while so employed; Oct. 28th.

**Staff Officer, 1st Class.**—(Air.)—Maj. H. F. Towler, and to be actg. Lieut.-Col. while so employed; Nov. 2nd.

The following temporary appointments are made:—  
**Brigadier-General (Staff).**—Lieut.-Col. E. B. Gordon, D.S.O., and to be actg. Brig.-Gen. while so employed; Nov. 1st.

**Staff Officers, 2nd Class.**—Capt. H. I. Hamner, and to be actg. Maj. while so employed; Nov. 1st. (Air.)—Maj. G. H. Thomson; Oct. 18th.

## *Flying Branch.*

Lieut.-Col. W. D. Beatty to be Lieut.-Col. (A.), from (T.); Oct. 5th.  
Maj. S. T. Dockray to be Maj. (K.B.), from (T.); Sept. 22nd.

Capt. H. Lawson to be graded for pay as Capt. while employed as Capt. (A. and S.); Nov. 4th.

Lieuts. to be actg. Capt. while employed as Capt. (A.):—W. L. Grech; Aug. 9th. (Hon. Capt.) L. S. Ladd; Oct. 18th. C. P. Allen; Oct. 24th. W. R. B. Annesley; Oct. 27th. E. M. Coles, G. W. Curtis; Oct. 30th. M. D. Allen; Nov. 2nd.

Sec. Lieut. H. K. Goode to be actg. Capt. while employed as Capt. (A.); Oct. 28th.

Lieut. J. C. Cotton to be Lieut. (A.) from (T.); Oct. 4th.

Lieuts. to be Lieuts. (A.) from (Obs. Officers):—T. C. Stewart; April 23rd. E. B. B. Jefferson; Aug. 16th (substituted for notification in *Gazette*, Sept. 24th).

Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. (A.):—J. W. Benton; May 29th (substituted for notification in *Gazette*, June 18th). P. C. Weaver-Adams; June 30th. G. R. St. C. Gwynne-Timothy; Sept. 30th.

The following are granted temporary commns. as Sec. Lieuts. (A.):—J. Rhodes (Sec. Lieut., W. York. R., T.F.); July 31st. Substituted for notification in *Gazette*, Sept. 6th. J. Gibson (Sec. Lieut., R.F.A., S.R.); Sept. 15th.

The following prob. Flight Officers (late R.N.A.S.) are granted temporary commns. as Sec. Lieuts. (A.):—J. B. Young; Sept. 30th. M. Walker; Oct. 5th.

The following Flight Cadets are granted temp. commns. as Sec. Lieut. (A.):—66834 J. F. Houchin; Aug. 30th. 32263 J. H. B. Ives; Sept. 28th. 104887 G. S. Mottram; Oct. 1st. 17760 R. F. Preedy; Oct. 9th. 154705 G. S. Overend; Oct. 14th. 512407 R. O. Standing, 4746 A. Lawrence, 117282 L. C. Atkins; Oct. 24th. 94506 C. E. Garrod, 37125 R. A. Hawman, 401079 A. D. Cruickshank, 113303 D. C. Bristow, 154931 A. Pringle, 422985 E. A. Blake, 88657 C. H. Watson, 100527 W. Imlay, 5522 A. M. Murray, 10/3490 E. S. Cook, 21541 J. H. Code, 110325 G. C. Crookshanks, 29329 J. J. Rankin, 61267 T. F. Strange, 237337 C. S. Theobald; Oct. 25th. 32047 W. S. S. Wray, 117771 W. Blais, 154777 S. P. Ryder, 50617 W. Leith, 128060 F. E. W. Davis, TR/66392 C. G. D. Airey, 117209 R. B. Moore, 154783 R. W. Laidlaw; Oct. 26th. 323166 F. H. Roberts, 5267 J. E. Neilson, 620159 J. Medcalf, 117497 A. J. Dodsworth; Oct. 27th. 94784 J. Clark, M2/080825 J. T. Foreman, 117157 A. Abernethy, 302901 W. L. Woodhouse, 201281 C. I. Collinge, 14066 A. C. Grave, 117542 W. L. Martin, 9247 J. L. Bowie, 356097 H. C. Lee, 110334 J. S. Heggie, 23152 J. R. Stewart, 137028 G. Senior, 110181 H. G. Chapman, 5/97148 R. K. Mason; Oct. 28th. 47192 G. A. March, 117664 S. Spratt, 626077 R. Ingram, 2635 C. Crosthwaite, 111779 J. Crawford, 14/250312 G. C. G. Cates, 23684 H. D. Clevely, 119653 T. Stewart, X285 G. W. Shepherd, 99932 F. Gough, 14548 E. Grimshaw, 201141 A. J. Sandford, 100376 W. A. C. Haimes, 255165 C. F. Bennett; Oct. 29th. 100107 E. J. H. Wright, 19159 H. Enzlin; Oct. 30th. 128107 T. L. Irving, 10444 G. B. Eldred, 306605 R. G. Scott, 128202 W. Leslie, 154643 J. L. Stevenson, 3/57792 K. Onyett, 54752 A. G. Boland, 289 G. West, 20423 J. C. Fairbairn, 321587 H. G. Macklin, 4286 A. B. Fricker, 57632 C. D. Metcalfe, 110110 A. A. Ker, 5/96489 G. E. Reed; Oct. 31st.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (A. and S.):—114756 J. E. S. Tennant; Oct. 5th. 63277 F. W. Trend; Oct. 15th. 137081 H. C. Smith; Oct. 25th. 137962 J. R. Frean, 137914 R. Haimeyr, 137942 H. S. Russell; Oct. 26th. 137887 H. C. A. Arnot, 137930 D. R. Sass, 176454 R. Bigg, 176456 C. Bevis, 176457 N. T. Brookes, 176458 R. E. Bell, 176460 F. N. Brink, 176464 B. M. Cairns, 176466 L. G. Crowder, 176467 C. G. Cooper, 176470 S. T. H. Daniel, 176473 E. B. Fison, 176497 H. T. Aylliff, 176498 G. L. C. Beattie, 176500 L. G. Belton, 176501 M. C. Burt, 176502 L. M. Brown, 176503 A. J. Cundill, 176508 W. Courts, 176513 H. V. Edkins, 176515 E. H. Edgar, 176516 N. J. Eddy, 176519 J. S. Ford, 176522 H. M. Fridjohn, 176525 J. D. Gallwey, 176526 G. V. Gordon, 176527 E. B. Gascoigne, 176529 J. F. R. Greef, 176530 H. J. Godfrey, 176532 E. Glaholm, 176538 R. Hirsch, 176540 E. H. Hodgson, 176547 J. E. Hofman, 176548 G. M. Hay, 176570 M. F. S. Burger; Nov. 2nd.

Sec. Lieut. R. T. Smith (late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut. (K.B.); Sept. 14th.

128376 Flight Cadet A. E. S. Gascoigne is granted a temp. commn. as Sec. Lieut. (K.B.); Oct. 12th.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (Obs. Offrs.):—175889 R. W. Smith, 178024 H. E. J. Steele, 177986 E. F. Shaw, 177136 R. C. Hatcher, 178125 A. G. Mann, 137630 E. B. Cross, 54532 D. McIntyre, 176187 C. S. Miller, 177083 D. McK. Ferrier; Oct. 24th. 187247 R. Fortune, 175 O. A. C. Scarry; Oct. 26th.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (S.):—35299 G. Warhurst; Oct. 19th. 100607 L. W. Kersley, 100535 R. H. Price, 22531 R. D. Bird, 4298 A. G. Thackray; Oct. 23rd.

The following relinquish their commns. on ceasing to be employed:—  
Sec. Lieut. R. H. Blackmore; June 10th. Sec. Lieut. H. C. W. Ross; Aug. 12th. Lieut. H. B. H. Dickinson (Lieut., I.A.R.O.); Aug. 16th. Lieut. B. M. Hay (Capt., Can. Engineers); Oct. 16th. Sec. Lieut. (Hon. Lieut.) J. I. T. Harrison (Lieut., Lan. Fus.); Oct. 25th. Sec. Lieut. (Hon. Lieut.) F. S. Williams (Lieut., Mon. R., T.F.); Oct. 28th. Lieut. N. C. Crombie (Lieut., R.F.A., T.F.); Oct. 29th.

Capt. A. P. Haywood relinquishes his commn. on account of ill-health caused by wounds, and is granted the hon. rank of Capt.; Nov. 13th.

The following Lieuts. relinquish their commns. on account of ill-health contracted on active service, and are granted the hon. rank of Lieut.:—R. D. Buxton; Oct. 19th. J. Fitz-Hugh, J. E. Le Gallias, J. H. C. Nixon; Nov. 13th.

Lieut. (Hon. Capt.) C. A. Moore (Capt., Man. R., C.E.F.) relinquishes his commn. on account of ill-health; Nov. 13th.

Lieut. E. Rowlands relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lieut.; Nov. 13th.

The following Lieuts. relinquish their commns. being physically unsuited

for the duties of Pilots or Observers:—C. S. Challoner, L. C. Galloway; Nov. 13th.

The following Sec. Lieuts. relinquish their commns. on account of ill-health: S. Gaskill, and is granted the hon. rank of Sec. Lieut.; June 22nd. J. Thompson; Nov. 13th.

The following Sec. Lieuts. relinquish their commns., being physically unsuited for the duties of Pilots or Observers:—G. Begg, L. W. Faucett; Nov. 13th.

The dates of appointment of the following as Sec. Lieuts. (A.) are as now stated:—P. L. Teasdale; May 27th. S. T. Goodnoh; July 15th. F. W. Barker; July 20th.

The date of appointment of A. J. Hamilton as Sec. Lieut. (A. and S.) is April 27th, and not as stated in *Gazette*, Aug. 27th.

The notification in *Gazette*, Oct. 15th, concerning Lieut. R. D. Buxton is cancelled.

The notification in *Gazette*, Sept. 10th, concerning Flight Cadet R. S. Stainsby is cancelled.

The notification in *Gazette*, Oct. 29th, concerning Lieut. H. E. Haslehurst, is cancelled.

The notification in *Gazette*, Oct. 25th, concerning Sec. Lieut. J. E. Phelps is cancelled.

The notification in *Gazette*, Oct. 25th, concerning Sec. Lieut. J. V. Flanagan is cancelled.

The notification in *Gazette*, Sept. 24th, concerning Lieut. C. G. Fenton, is cancelled.

The notification in *Gazette*, Sept. 10th, concerning Lieut. A. D. Light, is cancelled.

The notification in *Gazette*, Oct. 11th, concerning Sec. Lieut. J. Gibson is cancelled.

The notification in *Gazette* of Sept. 17th concerning Sec. Lieut. (Hon. Lieut.) A. J. Tremblay is cancelled.

The initials of Sec. Lieut. G. V. Raymond are as now described and not as in *Gazette* of July 16th.

The notification in *Gazette*, June 25th, concerning Sec. Lieut. (Hon. Lieut.) T. C. Stuart (Temp. Lieut., New Armies Gen. List) is cancelled.

The notification in *Gazette*, Sept. 13th, concerning Sec. Lieut. P. C. W. Adam is cancelled.

The notification in *Gazette*, Sept. 17th, concerning Lieut. E. W. Grant is cancelled.

## *Administrative Branch.*

H. B. Nutting (Maj., Ind. Army) is granted a temp. commn. as Capt., and to be Hon. Maj.; Sept. 12th, seniority April 1st, and prec. next below F. A. Maclean.

Capt. C. J. Dickinson to be Capt. from (A.); Sept. 30th.  
Lieut. (actg. Capt.) W. Mitton retains the actg. rank of Capt. whilst employed as Capt. from (A.); Oct. 24th.

Lieuts. to be actg. Capt. while employed as Capt. (A.):—W. Bowring; Oct. 29th. H. Jackson; Nov. 1st.

S. Morris (Qr.-Mr. and Hon. Capt., A.S.C.) is granted a temp. commn. as Capt.; April 29th, seniority April 1st, and prec. next below S. H. Cleall.

Lieuts. (A.) to be Lieuts.:—J. E. Arnott; Aug. 7th. L. C. Tyson; Sept. 28th. H. W. Holmes; Oct. 16th. (Hon. Capt.) F. H. H. Miles; Oct. 17th. S. H. Preston; Oct. 19th. B. C. Scott; Oct. 21st. W. R. Northridge; Oct. 25th. T. D. Penrice; Oct. 29th. Lieut. W. V. Radford to be Lieut., from (K.B.); Oct. 29th.

Lieuts. (O.) to be Lieuts.:—H. C. Reade; April 1st. (Hon. Capt.) E. F. G. Thomson; Oct. 23rd.

Lieut. J. A. Clarke to be Lieut., from (S.); Sept. 12th.

W. N. Cuthbert (Temp. Lieut., E. Surr. R.) is granted a temp. commn. as Lieut.; July 6th, seniority April 1st, and prec. next below A. C. N. Spicer.

H. V. Whitaker, late Lieut., R.A.F., is granted a temp. commn. as Lieut.; Nov. 11th.

The following are granted temp. commns. as Sec. Lieuts., and to be actg. Lieut., while specially employed:—A. G. Whittaker; Oct. 8th. S. A. Knight; Nov. 5th. W. La Brun (Hon. Capt., Ret. List), and to be Hon. Capt.; Nov. 8th. P. Brown, A. T. Cooper; Nov. 11th.

Sec. Lieuts. to be actg. Lieuts. while employed as Lieuts.:—R. D. Thomas; Oct. 16th. T. H. Holmes, from (O.); Oct. 20th.

H. F. Webb (Temp. Sec. Lieut., R. Suss. R.) is granted a temp. commn. as Sec. Lieut.; Aug. 28th, seniority from April 1st, prec. next below J. G. Tennant.

The following are granted temporary commns. as Sec. Lieuts.:—  
A. E. Firth (Sec. Lieut., R.F.A., S.R.); Sept. 23rd, seniority April 1st, prec. next below R. E. F. L. Bristow.

The following are granted temporary commns. as Sec. Lieuts.:—H. B. Hinde; July 1st. R. E. Cunningham; Sept. 6th. E. R. Webb; Oct. 26th. L. J. Slack; Oct. 29th. J. Murriner, R. Twitchell (P.F.O., late R.N.A.S.), J. O. Minshall (Hon. Sec. Lieut., retd. pay), C. B. Brown (Sec. Lieut., ret. List, T.F.); Nov. 8th. E. Albert, H. T. Backhouse, J. T. Brown, H. B. Chorley, F. W. Crawford, A. P. Dodd, F. Fogg, B. M. Hastings, A. Higham, W. S. B. Northover, G. H. Nutter, E. S. Ripley, F. G. Robinson, T. W. Vanderpump, W. D. Barnett (late Sec. Lieut., R.O. Yorks. L.I.); H. E. Goddard (Capt., retd. List, T.F.), and to be Hon. Capt., H. O. Newland (late Lieut., Gen. List), and to be Hon. Lieut., E. N. Paterson (Lieut., retd. List, T.F.), and to be Hon. Lieut., A. N. Wyatt (Hon. Capt., retd. List) and to be Hon. Capt.; Nov. 11th.

J. Van N. Reynecke (Sec. Lieut., late Gen. List, R.F.C., on prob.) is confirmed in his rank as Sec. Lieut.; Oct. 9th.

The following relinquish their commns. on ceasing to be employed:—Lieut. A. V. Paris (Lieut., City of Lond. Yeo.); Oct. 15th. Lieut. T. E. Cunningham; Oct. 17th. Sec. Lieut. R. P. Nethercot, M.C. (Lieut., W. York. R.); Oct. 31st.

Lieut.-Col. H. H. Southey relinquishes his commn. at his own request; Nov. 13th.

Lieut. H. Ravenhill relinquishes his commn. on account of ill-health, and is granted the hon. rank of Lieut.; Nov. 13th.

The following Sec. Lieuts. relinquish their commns. on account of ill-health, and are granted the hon. rank of Sec. Lieut.:—J. C. Child, W. Hall; Nov. 13th.

The following Sec. Lieuts. resign their commns.:—R. J. Barnes; Aug. 26th. T. C. L. Etherington; Nov. 13th.

The date of appointment of Lieut. S. Currington is July 10th, and not as stated in *Gazette*, Sept. 17th.

The initials of Lieut. Sir H. W. A. Ripley Bt., are now as described, and not as in *Gazette* Oct. 11th.



**Technical Branch.**

Capt. (actg. Maj.) N. B. Tomlinson retains his actg. rank whilst employed as Maj. from (S.O.); Oct. 9th.  
Capt. J. K. Mountain to be actg. Maj. whilst employed as Maj. from (S.O.); Nov. 4th.

Sec. Lieuts. to be actg. Capt. whilst employed as Capt. :—(Actg. Lieut.) D. H. Moore; Sept. 21st. (Hon. Lieut.) E. G. Herbert; Nov. 1st.  
W. G. Aston (Capt. A.S.C.) is granted a temp. commn. as Capt.; Sept. 20th.

Lieuts. to be actg. Capt. whilst employed as Capt. :—L. S. Newns; July 2nd. H. C. Peirce, from (Ad.); Oct. 15th.

Sec. Lieut. G. Lacey to be actg. Capt. whilst employed as Capt.; Oct. 4th.

Sec. Lieuts. to be actg. Lieuts. whilst employed as Lieuts. :—(Hon. Lieut.) C. H. Higson, R. Hall (Hon. Capt.) J. G. Russell, from (Ad.), A. Spring, (Hon. Lieut.) E. Tanner, A. J. Williamson; Oct. 1st. D. R. Morford; Nov. 2nd.

H. P. Northcote, Lieut. (W. York. R. S.R.), is granted a temp. commn. as Lieut.; Aug. 24th. (Substituted for notification in *Gazette*, Oct. 15th.)

W. E. Baker (Or.-Mr. and Maj., retired pay) is granted a temp. commn. as Lieut., and to be Hon. Maj.; Oct. 25th.

Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their rank as Sec. Lieuts. :—H. Marsden; Sept. 19th. P. S. Beaufort; Oct. 10th.

Sec. Lieuts. (Admin.) to be Sec. Lieuts. :—R. T. Smith; June 5th. D. C. Manuel; June 10th. A. H. Durand; Aug. 7th. H. N. Hader; Sept. 23rd. P. C. Barratt, G. Hill; Oct. 5th. D. Lidderdale; Oct. 10th. R. B. Cherry; Oct. 12th. C. S. Hill; Oct. 13th. T. R. Davies; Oct. 16th. H. D. Diggle; Oct. 21st.

The following are granted temp. commns. as Sec. Lieuts. :—L. Marsh (Temp. Lieut., attd. Lan. Fus.) to be Hon. Lieut.; Sept. 13th. J. K. Shrimpton (Sec. Lieut., R.G.A., Spec. Rec.); Oct. 12th. A. M. Godfrey, B. O. Nash, H. A. Welch; Nov. 11th.

The following relinquish their commns. on ceasing to be employed :—Sec. Lieut. (Hon. Lieut.) F. D. Sutherland (Lieut., Can. M.G.C.); July 4th. Capt. H. I. MacIver (Lieut., R.N.V.R.); Aug. 23rd. Sec. Lieut. F. P. D. Scott; Sept. 10th. Sec. Lieut. (Hon. Capt.) J. Barnes (Temp. Capt., Notts. and Derby R.); Oct. 17th. Sec. Lieut. (Hon. Lieut.) W. L. Lancaster (Lieut., E. Surr. R.); Oct. 19th. Capt. W. T. Webley (Lieut., R.N.); Oct. 28th.

The surname of Sec. Lieut. E. G. Davison is as now described, and not as in *Gazette*, Oct. 22nd.

The notification in *Gazette* July 23rd, concerning Sec. Lieut. R. T. Smith is cancelled.

The notifications in *Gazette* Oct. 8th and 15th, concerning Lieut. L. Marsh are cancelled.

**Medical Branch.**

W. C. A. Ovey is granted a temp. commn. as Lieut.; Nov. 10th.

**Dental Branch.**

The following are granted temp. commns. as Lieuts. :—W. J. Singleton, J. Smith; Nov. 11th.

**Memoranda.**

Lieut.-Col. C. G. Hoare, C.M.G., to be actg. Brig.-Gen. while specially employed; April 1st.

C. C. Marindin, D.S.O. (Lt., Lieut.-Col., R.A.), is granted a temp. commn. as Lieut.-Col.; Oct. 28th, seniority April 1st, and prec. next, below L. F. Blandy, D.S.O.

Maj. E. A. Ewart, O.B.E., to be actg. Lieut.-Col. while specially employed; Nov. 12th.

Capt. (actg. Maj.) E. W. Simpson to take seniority from April 1st, with prec. next below Capt. W. V. Sherwell.

Lieut. E. Edwards to be Temp. Capt. (with pay and allowances as a Lieut.) while specially employed; Aug. 22nd.

The following are granted the hon. rank of Capt., and to retain their actg. rank :—Lieut. (actg. Capt.) W. H. Ellison, Sec. Lieut. (Hon. Lieut.) (actg. Maj.) C. Harvey.

Lieut.-Col. (actg. Col.) I. M. Bonham-Carter relinquishes the actg. rank of Col.; April 1st.

Lieut.-Col. G. L. Crossman, C.M.G., D.S.O. (Lt., Lieut.-Col., W. Yorks Regt.), relinquishes his commn. on ceasing to be employed; April 12th.

Sec. Lieut. A. C. Davern to take rank and prec. in the Air Force as if his appointment as Sec. Lieut. bore date Oct. 4th.

**London Gazette, November 15th.**

The following temporary appointment is made at the Air Ministry :—

Staff Officer, 3rd Class.—Capt. E. J. Cuckney, D.S.O.; Oct. 27th.

The following temporary appointment is made :—

Staff Officers, 3rd Class.—Graded for purposes of pay at Air Ministry rates : Capt. R. E. Ollerenshaw; Oct. 23rd.

The following temporary appointments are made :—

Staff Officers, 1st Class.—(Air.) Maj. V. Gaskell-Blackburn, D.S.C., and to be actg. Lieut.-Col. whilst so employed; Oct. 19th. Lieut.-Col. H. Campbell, D.S.O.; Oct. 31st.

Staff Officers, 2nd Class.—And to be actg. Maj. while so employed. (P.) :—Lieut. (actg. Capt.) C. C. Hansford; July 22nd. Lieut. (actg. Capt.) G. H. A. Hawkins; Aug. 19th. Capt. E. St. C. Harnett, vice Capt. (actg. Maj.) B. W. Bentinck, who relinquishes the actg. rank of Maj.; Nov. 2nd.

Staff Officer, 4th Class (1st Grade).—Capt. E. O'D. Crean; Oct. 21st.

Staff Officers, 4th Class (2nd Grade).—Capt. P. White; Sept. 26th. Lieut. T. N. Jennings, Lieut. C. J. Reynolds, vice Capt. G. B. Anderson; Nov. 6th.

**Flying Branch.**

Capt. S. H. Long, D.S.O., M.C., to be actg. Maj. while employed as Maj. (A.); Sept. 15th.

Lieuts. to be actg. Capt. while employed as Capt. (A.) :—J. E. Wood; Oct. 15th. E. T. Lough; Oct. 21st. D. Carruthers; Oct. 22nd. D. J. Waterous, D.F.C.; Oct. 29th. E. L. Ives; Oct. 30th. E. J. Jacques; Oct. 31st. C. W. D. Bell, M. Stuart-Menteth, M.C.; Nov. 1st. J. H. McNeaney; Nov. 8th.

Sec. Lieut. H. G. Clappison to be actg. Capt. while employed as Capt. (A.); Oct. 14th.

Sec. Lieut. J. L. Brown to be actg. Capt. while employed as Capt. (O.); Oct. 28th.

Capt. C. B. de T. Drummond to be Lieut. (A.) from (T.); July 9th.

Lieut. Hon. A. J. W. Keppel to be Lieut. (A.) from (Tech.); Oct. 24th.

Sec. Lieut. H. A. Ball, M.M., to be actg. Lieut. (K.B.) while employed as Balloon Comdr.; Nov. 9th.

Sec. Lieuts. (late Gen. List, R.F.C., on prob.) are confirmed in their ranks as Sec. Lieuts. (A.) :—A. Smethurst; Oct. 21st. H. C. Killen, M. Dean, L. S. H. Bartlett, G. R. Butcher; Oct. 23rd. E. A. C. Watts, W. D. Durran, A. R. Ellwood, C. V. Forsyth, R. Y. Eccles; Oct. 24th. H. Blatcher, C. S. Lammiman; Oct. 25th. G. R. Mason, W. J. Chenery, J. A. Humphrey, L. G. Destrube, H. E. Higginson; Oct. 26th.

The following Prob. Flight Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lieuts. (A.) :—A. E. T. Bruce; Oct. 22nd. A. H. Wilson; Oct. 23rd. F. S. Adams, R. Johnston; Oct. 24th.

The following are granted temp. commns. as Sec. Lieuts. (A.) :—H. H. Crofts (Sec. Lieut., V.L.I., T.F.), J. C. Fitzmaurice (Lieut., K. L'pool R., T.F.), and to be Hon. Lieut.; Oct. 22nd. R. E. Quesmel (Temp. Sec. Lieut., N.

Lan. R.), G. F. Watson (Sec. Lieut., R. Fus.), W. Reid (Lieut., R.F.A., S.R.), and to be Hon. Lieut.; Oct. 23rd. H. W. Pearson (Lieut., M.G.C., C.E.F.), and to be Hon. Lieut.; Oct. 24th. J. C. Campbell (Sec. Lieut., W. York. R., T.F.); Oct. 26th.

The following cadets are granted temp. commns. as Sec. Lieuts. (A.) :—N. P. Aldred, R. F. Angus, P. C. Armstrong, H. N. Baker, D. C. Brown, D. H. Brown, A. I. Boyer, F. M. Buchanan, C. A. Campbell, W. H. Carey, J. Carlisle, C. C. Chapman, O. H. Clearwater, W. L. Collins, K. C. R. Coulter, D. M. Cowan, M. C. Dawson, C. J. de Laplante, A. A. Dumouchel, J. Elliott, G. M. Fanelli, J. A. O. Fenton, E. L. Goold, G. M. Hallatt, E. M. Harris, F. W. Haserick, W. McK. Howell, R. E. Jellison, F. Kirby, M. K. Knudtson, H. A. Lambert, G. Lamont, W. L. Lidster, A. D. Lockhart, A. W. Martin, H. V. Morehouse, W. G. Macfarlane, M. McIsaac, P. W. McNaughton, H. E. Nash, E. C. Nickerson, V. O'Neill, H. T. Parsons, G. C. Phillips, C. E. A. Rice, H. E. Roenisch, F. Roy, L. E. Snowden, C. E. Stewart, J. F. Stone, C. Stuart, S. J. Stuart, T. Swan, A. L. Veale, N. A. Walker, H. C. Weese, A. V. F. Weir, T. H. Welch, H. E. Wilson, A. V. Bonner, E. Laver, B. V. Nash; Oct. 3rd.

The following Flight Cadets are granted temporary commissions as Sec. Lieuts. (A.) :—273 W. H. Truesdale; July 7th. 530616 W. P. Smith; July 12th. 127731 E. R. Dixon; July 14th. 206244 J. M. Adams; July 18th. 0834 N. Pettitt, 105482 G. G. Foolkes; July 24th. 56174 H. J. Crisp; July 25th. TR/132335 H. M. Thompson; July 27th. 434840 E. G. Welsby, 90840 H. S. Spencer; July 29th. 115092 R. F. Wayman; Aug. 1st. 293435 F. C. Williams, 491210 W. Greenwood; Aug. 3rd. 20832 F. G. Watson; Aug. 4th. 50737 M. A. Price; Aug. 5th. 320019 E. G. Hughes; Aug. 6th. 630842 H. J. Mitchell; Aug. 7th. 64257 R. S. Davey, 40490 G. W. Butcher, P/18334 A. C. Harper, 295145 F. W. Hill; Aug. 8th. 208767 C. L. Henn, 290502 E. N. Fletcher, 345191 C. H. Whittingham, 93566 J. L. Wilcock, CM240 R. T. Scott; Aug. 9th. 320017 G. L. Sutton, 96257 L. T. Carruthers, 230432 W. L. Arnold, 482062 W. D. Edwards, 40136 C. W. Jones, M2/152747 B. J. Hill; Aug. 10th. 270077 S. A. C. Newnham, M2/150359 C. McC. Vincent, 101157 C. E. Woodger; Aug. 11th. Mr/08470 W. Day; Aug. 12th. 280109 W. Hunt, 50795 C. I. Butler, 40403 P. P. Whelan, 70059 F. W. Boswell, 4/51268 E. L. Rees; Aug. 14th. S/16589 W. J. Davis; Aug. 16th. 31830 E. A. C. Gillies; Aug. 17th. 504118 W. H. Drew; Aug. 18th. 40200 V. H. N. Le Vasseur Noel, 230906 E. R. Davis, 95935 F. H. Cowley; Aug. 19th. 624082 F. J. Jackson; Aug. 20th. 200732 H. Bagshawe; Aug. 22nd. 290970 E. H. Rossington; Aug. 23rd. 602031 J. Paterson; Aug. 26th. 110252 J. L. Fisher; Aug. 27th. M2/191162 A. J. Brewin, 74712 E. J. N. Finlayson, 50821 P. W. Ross; Aug. 28th. 839 R. C. Stout, Sept. 1st. 40146 H. V. Ferrin, Sept. 3rd. 237841 G. F. Sharman; Oct. 8th. 110420 A. W. Ansell, 100449 A. C. Brown; Oct. 20th. 137439 A. E. J. Pratt; Oct. 23rd. 55489 A. J. C. Overall; Oct. 25th. 110470 C. R. L. Shaw, 100465 H. C. Sparks, 117171 T. H. A. Christie, 1700 T. P. O'Donnell, 316038 W. R. Mawhinney, 320052 W. P. Lewis, 100567 S. R. Packer, 330136 J. R. Glover, 522097 B. H. Windsor, 7064 W. K. Cole, 100678 H. M. Feltham, 100238 B. W. H. Arnold, 553435 W. T. Ferguson, 778933 F. E. Collins, 32574 J. L. Custard, 3774 H. E. Cutler; Oct. 30th. 38105 W. L. Webb, 100409 H. A. Sanders, 11698 J. P. Henchie, 92452 L. C. Filby; Oct. 31st.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (A. and S.) :—6/3913 H. G. Warburton; Aug. 24th. 128251 A. B. C. Emmett; Aug. 30th.

Sec. Lieut. J. L. Brown (late R.F.C., Gen. List, on prob.) is confirmed in his rank as Sec. Lieut. (O.); July 15th.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (K.B.) :—40080 S. Abrines, 50454 S. C. Ashby, 24573 W. Berry, 26613 A. Clarke, 767318 C. C. Davis, 13/54760 C. B. Harold, 89716 J. W. Shand, 117601 H. Suter, 451519 C. G. Wood; Oct. 25th.

The following Flight Cadets are granted temp. commns. as Sec. Lieuts. (Obs. Officers) :—68716 L. E. Russell; July 23rd. TR/3/27160 H. C. McKinley, TT/02646 A. S. Rutherford, 02631 J. Pender, 100332 W. T. Jones, 522027 F. E. Smith, 72926 T. Smith; Aug. 4th. 230582 T. A. Codd, 545866 N. H. Allen; Aug. 27th. 36957 F. Bennett, 34668 A. H. Hill, 1/6412 W. N. Scott, 528300, S. Medofski; Aug. 28th. 4603 R. W. Fyson, 75720, A. Reed; Nov. 1st. NK783 J. Gerrard, 175849 H. W. Brierley, 176770 G. H. Greenwood; Nov. 4th.

R. M. Felcher is granted a temp. commn. as Sec. Lieut. (Obs. Officer); Oct. 8th.

The following Prob. Flight Officers (late R.N.A.S.) are granted temp. commns. as Sec. Lieuts. (S.) :—B. W. Jackson, E. P. Senior; Oct. 23rd.

Lieut. J. A. B. Lane (Lieut., Hussars) relinquishes his commn. on ceasing to be employed; Sept. 16th.

Capt. H. E. Fletcher, D.F.C., relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Capt.; Nov. 16th.

Lieut. T. J. McInnis (Can. Local Forces) resigns his commn.; Nov. 16th.

The date of appointment of Maj. (actg. Lieut.-Col.) T. W. C. Carthew, D.S.O., is June 25th, 1918, and not as stated in *Gazette* July 5th.

The surname of Capt. (actg. Maj.) A. G. Waller is as now described, and not Walker, as stated in *Gazette* Oct. 29th.

The notification in *Gazette* Oct. 22nd concerning Lieut. (actg. Capt.) H. W. Elliott is cancelled.

**Administrative Branch.**

Maj. L. A. Burrows to be actg. Lieut.-Col. whilst employed as Lieut.-Col.; Oct. 1st. (Substituted for notification in *Gazette* Nov. 1st.)

The following are granted temp. commns. as Capt., seniority April 1st :—W. V. Sherwell (Capt., Dev. R., S.R.); April 23rd, prec. next below R. O. Abercromby; R. G. Home (Capt., R. Highrs.); July 5th (prec. next below J. H. Tudhope, M.C.). E. St. C. Harnett (Temp. Capt., Gen. List); Aug. 7th (prec. next below J. E. Vernon).

N. Robertson (Asst. Payr., R.N.V.R.) is granted a temp. commn. as Capt.; Sept. 24th.

D. G. Northam (Temp. Lieut., Worc. R.) is granted a temp. commn. as Lieut., and to be actg. Capt. whilst employed as Capt.; July 1st, seniority April 1st.

Sec. Lieut. (actg. Lieut.) E. G. Burden to be actg. Capt. whilst employed as Capt.; Nov. 1st.

Lieuts. (A.) to be Lieuts. :—J. E. Arnott; Aug. 7th. A. Waterworth; Oct. 20th.

Lieuts. (O.) to be Lieuts. :—E. R. Wilkinson, M.C.; June 9th. H. H. Wade; Oct. 12th. (Hon. Capt.) C. C. Cole; Oct. 23rd. L. H. Scott; Nov. 1st.

W. B. Dunn (Maj., R. Dub. Fus.) is granted a temp. commn. as Lieut., and to be Hon. Maj.; July 13th, seniority April 1st, prec. next, below C. Joiner.

Sec. Lieut. (Hon. Lieut.) R. D. Thomas to be actg. Lieut. whilst employed as Lieut.; Oct. 16th.

Sec. Lieut. (Hon. Lieut.) K. J. Falconer (Lieut., Gord. Highrs.) relinquishes his commn. on ceasing to be employed; Nov. 1st.

Sec. Lieut. T. Tickle relinquishes his commn. on account of ill-health contracted on active service, and is granted the hon. rank of Sec. Lieut.; Nov. 16th.

Sec. Lieut. F. C. Wiltshaw resigns his commn., and is granted the hon. rank of Sec. Lieut.; Nov. 16th.

The following Sec. Lieuts. resign their commns., being physically unsuited for the duties of Pilots or Observers:—E. I. Godfrey, R. J. Gwilliam; Nov. 16th.  
The initials of Lieut. F. C. Meyer are as now described, and not as stated in *Gazette* Sept. 27th.

## Technical Branch.

Capt. E. I. David to be actg. Maj. while employed as Maj.; Nov. 4th.  
The following are granted temp. commns. as Capt. :—J. G. Y. Delmar-Morgan (Lieut.-Comdr., R.N.V.R.), and to be Hon. Maj.; Sept. 19th. T. Ridge (Temp. Capt., R.E.); Sept. 26th. R. K. Paton (Temp. Capt., Gen. List); Oct. 7th. C. Barrington (Temp. Capt., R.E.); Oct. 27th.  
Sec. Lieuts. to be actg. Capt. while empld. as Capt. :—(Actg. Lieut.) A. J. Moore; Aug. 23rd (substituted for notification in the *Gazette* Sept. 6th. P. Coyle; Oct. 29th.  
Lieuts. to be Lieuts. :—H. B. Harvey, from (O.); Aug. 23rd. C. B. D. Campbell, from (Ad.); Sept. 16th.  
S. W. Davis (Temp. Lieut., R.E.) is granted a temp. commn. as Lieut.; Oct. 3rd.  
Sec. Lieut. J. R. Cross to be actg. Lieut. while employed as Lieut.; Sept. 9th.  
L. A. Hooper (Temp. Sec. Lieut., Lab. Corps) is granted a temp. commn. as Sec. Lieut., and to be actg. Lieut. while empld. as Lieut.; Oct. 7th.  
The following Sec. Lieuts. (Hon. Lieuts.) relinquish their commns., and are granted the hon. rank of Lieut. :—T. Bainbridge, on account of ill-health contracted on active service; R. L. Brancker, on account of ill-health; Nov. 16th.

## Memoranda.

The following Lieut.-Cols. are granted the actg. rank of Col. (without pay and allowances of that rank) while specially employed :—R. G. Talbot; Nov. 4th. R. Cockburn; Nov. 7th.  
Capt. F. H. Austen to be actg. Maj. (without pay and allowances of that rank) while specially employed; Nov. 15th.  
Lieut. (actg. Capt.) J. Ramsay, M.C., is granted the hon. rank of Capt., and to retain the acting rank of Capt.  
Sec. Lieut. T. J. L. S. Boyd is granted the hon. rank of Lieut.  
Maj. J. G. Currie relinquishes his commn. on account of ill-health, and is granted the hon. rank of Maj.; Nov. 16th.

## Royal Flying Corps (Military Wing).

*London Gazette Supplement, November 14th.*

*Flying Officers.*—Temp. Sec. Lieuts. (on prob.), Gen. List, and to be confirmed in their rank :—D. P. Laird; Feb. 5th. H. L. Tamplin; Feb. 18th. F. L. Le Lievre, P. R. Moore; March 11th. J. S. Clark; March 12th. M. L. Green; March 13th. N. A. Weir; March 16th. W. C. Goudie; March 24th. H. B. Oldham; March 29th. G. C. C. Carr Harris; March 30th.  
The appointment of the following Temp. Sec. Lieuts., Gen. List, is antedated as follows :—H. A. White, to Feb. 2nd; J. T. Rogerson, to Feb. 3rd; W. C. Simon, to Feb. 25th.  
*Flying Officers, (Observers).*—Sec. Lieut. R. T. Langdon, Sec. Rif., T.F., and to be secd.; March 31st, seniority Feb. 9th. Temp. Sec. Lieut. (on prob.) C. B. Millett, Gen. List, and to be confirmed in his rank; Nov. 4th, 1917 seniority Sept. 17th, 1917.



## SIDE-WINDS

MESSRS. C. C. WAKEFIELD AND CO., LTD., are naturally proud of the fact that the world's record flight of Mr. Prodder on a Handley-Page with 40 passengers was accomplished—as was his earlier trip with 20 passengers over two years ago—with the aid of Castrol R as the lubricant. It speaks well for the high quality of this famous oil when practically every record flight made in this country has been achieved with its assistance, and the reputation it has enjoyed throughout the whole of the war among the Air Services is an enviable one. No doubt the name of Wakefield Castrol will play a prominent part in after-war aviation and motoring.

FROM Mr. Stuart A. Hirst, of the Blackburn Aeroplane and Motor Co., Ltd., comes a useful idea in the shape of an ever-astoring blotting-pad. Practical as he always is, we were very interested to hear that Mr. Hirst had tested one effectively or three months before deciding to utilise it as a Blackburn souvenir. Any reader of "FLIGHT" who could make use of one should send along their name to Mr. Hirst at the Blackburn headquarters, Olympia, Leeds.

THE fifth lecture of the series arranged by the Industrial Reconstruction Council will be held in the Saddlers' Hall, Cheapside, E.C.2, on Wednesday, November 27th. The chair will be taken at 4.30 by the Right Hon. J. H. Whitley, M.P., and a lecture on "Labour and Industrial Development" will be delivered by Mr. Ernest J. P. Benn, C.B.E., Chairman of the Council. Application for tickets should be made well in advance to the Secretary, I.R.C., 2 and 4, Tudor Street, E.C.4.

If you are interested in motor cars you cannot do better than become a regular reader of the *Auto.*, whose yellow cover has been so familiar to motorists for the past 22 years. Always bright and informative, each succeeding issue is a promise of better things in the near future.

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## IMPORTS AND EXPORTS, 1917-1918.

AEROPLANES, airships, balloons, and parts thereof (not shown separately before 1910). For 1910 and 1911 figures see "FLIGHT" for January 25th, 1912; for 1912 and 1913, see "FLIGHT" for January 17th, 1914; for 1914, see "FLIGHT" for January 15th, 1915; for 1915, see "FLIGHT" for January 13th, 1916; for 1916, see "FLIGHT" for January 11th, 1917; and for 1917, see "FLIGHT" for January 24th, 1918.

	Imports.		Exports.		Re-Exportation.	
	1917.	1918.	1917.	1918.	1917.	1918.
	£	£	£	£	£	£
January ...	10,842	49,402	67,033	24,765	—	—
February ...	9,479	51,941	26,512	13,545	6	—
March ...	11,158	47,930	58,517	11,451	—	1,000
April ...	21,141	33,342	21,151	10,815	—	—
May ...	6,877	942,866	59,713	67,224	—	—
June ...	2,670	864,296	14,647	35,658	—	—
July ...	9,104	1,834,293	106,250	10,800	—	—
August ...	18,680	566,137	68,315	71,503	258	—
September ...	9,047	505,160	56,491	8,033	30	100
October ...	58,086	294,835	73,580	9,166	100	—
	157,084	5,190,202	552,209	262,960	394	1,100

## NEW COMPANIES REGISTERED Private Companies

AERO TAXI, LTD., Castle Buildings, Whittaker Avenue, Richmond, Surrey.—Capital £1,000, in £1 shares. To establish, maintain and work an air line or lines for the conveyance of passengers, mails and goods. First director: J. A. Whitehead.

BRITISH MERCEDES MOTOR CO., LTD.—Capital £50,000, in £1 shares (15,000 preference). Acquiring business of the British Mercedes Motor Co., Ltd. (incorporated in 1914). First directors:—W. Dewis, J. T. Smith, F. Lenn Oliver and Louis Count Zborowski (American of British origin).

FLYING TRANSPORT, LTD., 67, Watling Street, E.C.—Capital £10,000, in £1 shares. Carriers and transporters of goods, passengers, &c., by aeroplanes, airships, &c.

GERRARD ENGINEERING WORKS, LTD.—15-19, Great Titchfield Street, W.—Capital £5,000, in £1 shares. Acquiring the business of manufacturers of component parts of aeroplanes, motor and mechanically propelled vehicles, carried on by H. Hurlin and W. Ingram as the "Hurlingham Aircraft Co." First directors: H. Hurlin and W. Ingram, E. E. Glover, and N. D. E. Robertson. Gerrard and Co., Ltd., have the right to two representatives on the board.

## Aeronautical Patents Published

Abbreviations:—cyl. = cylinder; I.C. = internal combustion; m. = motors.

### Applied for in 1917

The numbers in brackets are those under which the Specifications will be printed and abridged, &c.  
*Published November 21st, 1918.*

- 14,900. W. H. PICK and F. W. MORLEY. Hydro-planes and hydro-aero-planes. (120,069.)  
15,535. R. RUSSELL. Gas-bags. (120,088.)

### Applied for in 1918.

The numbers in brackets are those under which the Specifications will be printed and abridged, &c.  
*Published November 21st, 1918.*

800. C. E. LEE, G. FELLOWS and C. A. PRATT. Aeroplane propellers. (120,150.)

If you require anything pertaining to aviation, study "FLIGHT'S" Buyers' Guide and Trade Directory, which appears in our advertisement pages each week (see pages lxi, lxii, lxiii and lxiv).

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